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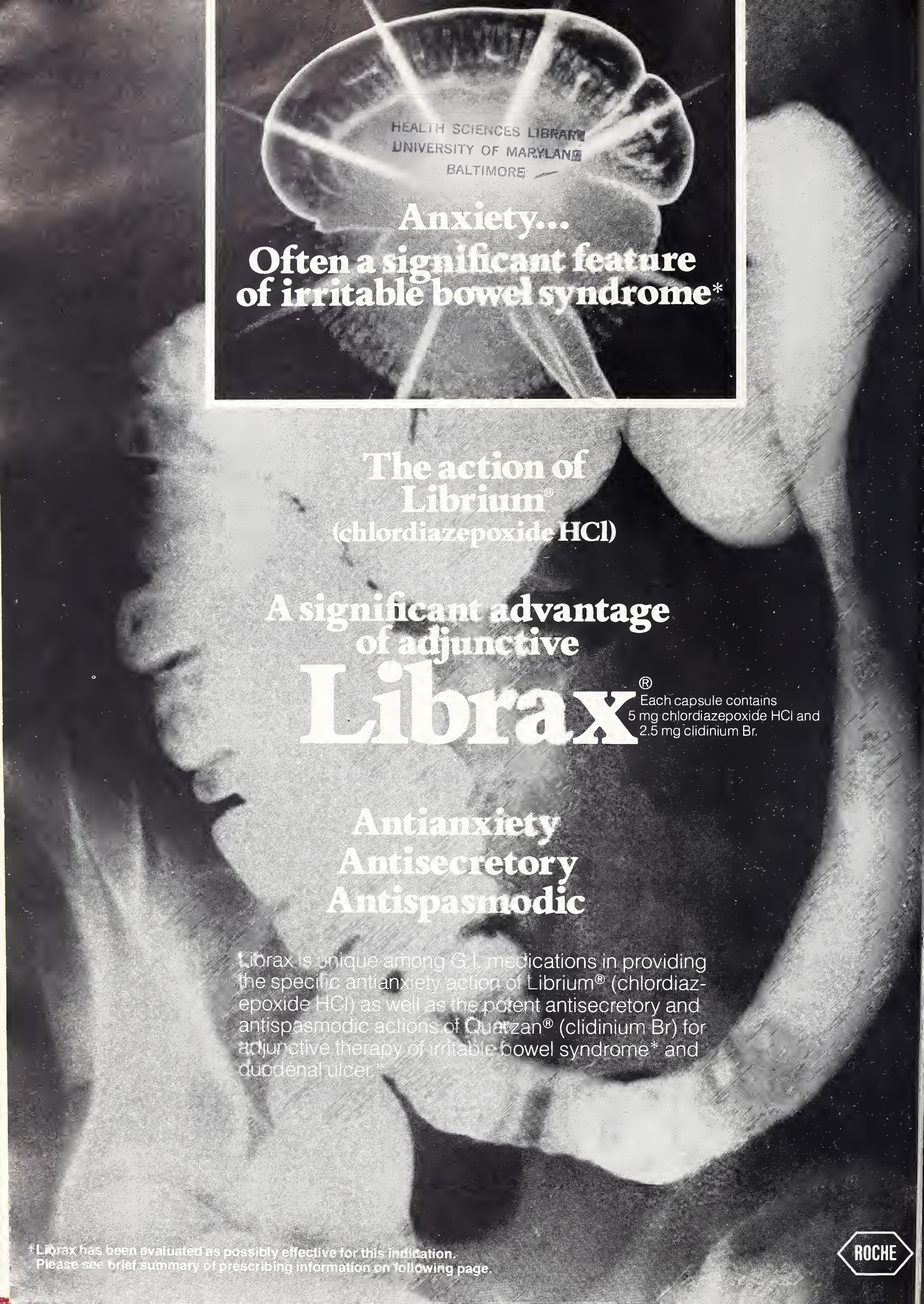

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

INFORMATION FOR AUTHORS

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 JANUARY 1978 NUMBER 1

"EFFORT" PNEUMOMEDIASTINUM*

R. RANDOLPH BRADHAM, M.D.**

During the past few years I have treated five patients for a clinical condition that might be called "effort" pneumomediastinum. All of these patients were young, and three of them developed pneumomediastinum during strenuous physical activity. The purpose of reporting these cases is to illustrate the features, diagnosis, and treatment of this condition, and to discuss the pathogenesis.

CASE REPORTS

Case 1: A 14-year-old, w. m., competitive tennis player, developed substernal pain suddenly while warming up for a match. He completed a two set match although uncomfortable with chest pain. He denied dyspnea. Examination revealed good breath sounds on both sides. There was a crunching or crackling sound over the precordium with each heart beat. This also occurred with deep breathing and was located in the precordial region. X-rays revealed air in the mediastinum but none in either pleural space. A barium swallow was negative. WBC was 6,400. This cleared in several days. He returned to the tennis court gradually after abstaining from physical exercise for one week.

Case 2: A 19-year-old son of a physician noted some pain in the right neck while doing some strenuous yard work, but thereafter played three sets of tennis in spite of the discomfort. The pain became more intense and he noted subcutaneous emphysema in the right neck and clavicular area. A chest x-ray demonstrated pneumomediastinum. Esophagram was negative. He recovered quickly with rest.

Case 3: A young male in his early thirties gave a history of having had a substernal chest discomfort for three weeks. This began while he was doing heavy physical work in a warehouse. He described a "crunching" feeling in his chest and stated that he felt that air was "popping back and forth" and that he could palpate air under the skin of his chest anteriorly. Examination revealed a mediastinal "crunch" with each heart beat. There was no subcutaneous emphysema when examined. A chest x-ray was negative. The patient gave a past history of having had a pneumothorax several years prior. It was believed that during the three weeks prior to examination, he had recurrent pneumomediastinum as he continued to do heavy work in spite of the chest discomfort. The symptoms and signs quickly disappeared with cessation of the hard physical work.

Case 4: A 20-year-old male medical student had sudden onset of chest pain associated with a sense of choking and dyspnea the day prior to admission. A mediastinal noise was heard and it was thought initially that he might have pericarditis. A pleuropericardial crackling was present with heart beat and inspiration. A chest x-ray showed mediastinal emphysema. WBC was 9,000. Symptoms and physical findings cleared within a few days of limited activity. The patient denied any physical exertion at onset but had an episode of moderate coughing prior to onset. He had a similar episode when in high school but no diagnosis was established.

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Case 5. A 17-year-old high school student actively engaged with his school's track team noted chest pain while running track three days prior to examination. The discomfort was not severe and localized more substernally. Although the discomfort became less, because of its persistence, he visited his physician. There was no physical evidence of pneumomediastinum. A chest x-ray showed a small left pneumothorax. It was believed that this patient might well have had a pneumomediastinum which decompressed itself by rupture into the left pleural space. Although this is only conjecture, it is based on the type of discomfort that he had initially which is unlike the sharp, pleuritic pain that patients have when a pneumothorax suddenly develops from a ruptured bleb. With aspiration of the air and a few days rest, he did well.

PATHOGENESIS

The pathogenesis of this entity is best explained by the studies reported by Macklin.[2] Experiments were done in animals in which air was blown through a catheter into a local part of the lung. He demonstrated that an air leak may break through from over distended alveoli of the lung into the underlying pulmonic perivascular sheaths and dissect along the sheaths to the mediastinum. This air is believed to dissect into the mediastinum and can rupture through the mediastinal pleura causing a pneumothorax.

DIAGNOSIS

The patient usually describes a substernal discomfort that sometimes gives a constrictive feeling or a choking sensation. The pain is usually not sharp but is persistent. Dyspnea is sometimes associated with the onset but this usually subsides when the patient rests. Some patients describe the "crunching" noise in their chest with the heart beat and some have palpated subcutaneous emphysema of the anterior chest wall. On physical examination, the lung fields are clear but on deep inspiration a rub or crunching sound is audible. The sound with the heart beat is a crunching or crackling sound as if the heart were surrounded by moistened rice crispies. Subcutaneous emphysema often dissects up into the cervical region and might also be present over the precordial area.

Chest x-rays must be obtained with special attention to a lateral view as often the air can be seen in the anterior mediastinum just below the sternum. (Figure 1) Air can collect also in the posterior mediastinum. The white blood count is usually not elevated. A barium swallow should be done to rule out ruptured esophagus. This condition should be differentiated from pneumothorax, myocardial infarction, angina, pericarditis, and spontaneous rupture of the esophagus. Pneumomediastinum is sometimes the earliest indication of a ruptured esophagus.

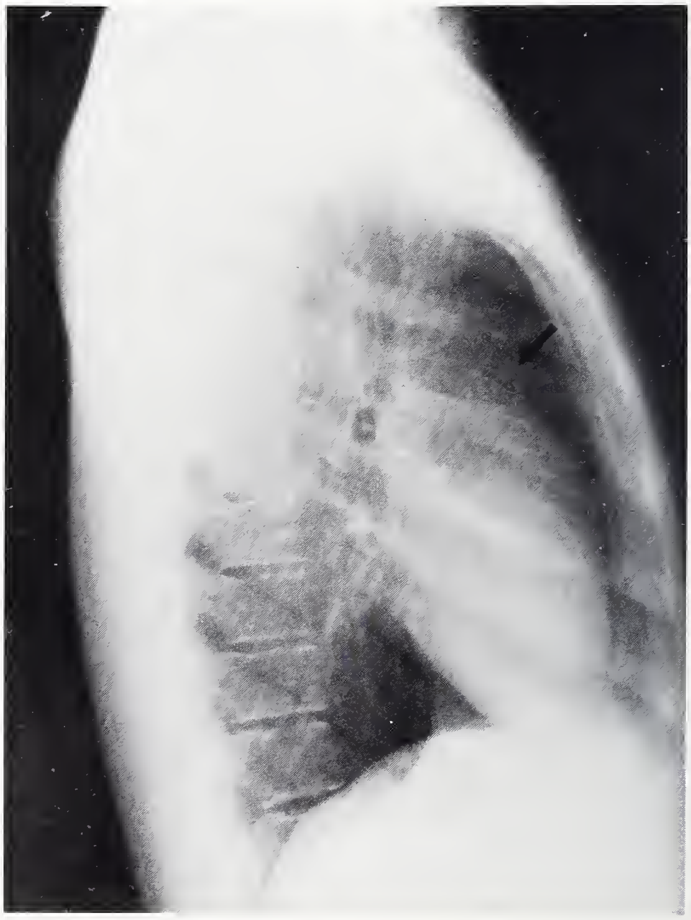

FIGURE 1: Air demonstrable in anterior mediastinum.

COMMENT

Mediastinal emphysema has been recognized clinically for many decades. Hamman[1] published an excellent clinical report on "Spontaneous Mediastinal Emphysema" in 1939. Prior to his report, mediastinal emphysema had been reported associated with trauma, asthma, resusitation in the newborn, pneumonia, violent effort with a closed glottis, and with extreme effort. Hamman's article is particularly valuable in the description of the physical signs of mediastinal emphysema. His seven cases were not associated with effort but occurred when the subjects were fairly quiescent. Two of his cases were associated with a pneumothorax which he considered to have occurred subsequent to the pneumomediastinum.

TREATMENT

Treatment consists of rest only. Antibiotics are not necessary unless the patient begins to show evidence of an infection. No decompression is necessary unless a significant pneumothorax develops. As soon as the symptoms and findings have subsided, the patient can be gradually returned to normal activity. Follow-up chest films should be obtained.

CONCLUSION

A young person who develops persistent chest pain following an athletic endeavor or other strenuous physical activity should be suspected of having pneumomediastinum. Thorough auscultation of the chest can quickly confirm the diagnosis. Chest x-rays should be done immediately and should include a lateral view. A barium swallow is necessary to rule out rupture of the esophagus. Even if air is not demonstrated on x-ray, a pericardial crunching sound is confirmatory evidence that pneumomediastinum has occurred. Usually with a few days rest, the process will subside. Activity can then gradually be resumed. There are usually no serious sequellae. □

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DISINFECTANTS: THEIR SELECTION AND USE

HAROLD DOWDA, Ph.D.*
ARTHUR F. DiSALVO, M.D.*

It frequently falls the duty of members of hospital infection committees to review and approve the use of various disinfectants. They must weigh a number of factors such as toxicity, corrosiveness, microbial killing efficiency, dilution and detergenicity in order to make a reasonable recommendation. For instance, one group of disinfectants, the phenolics, are unsurpassed for disinfecting areas possibly contaminated by the tubercle bacillus. The same group of disinfectants should be used sparingly, if at all, in areas where babies or small children are being tended.

The purpose of this paper is to review the advantages and disadvantages of the various classes of disinfectants.

PHENOL AND THE PHENOLICS

In 1865, Joseph Lister first used phenol solutions (carbolic acid) as a surgical disinfectant. The use of phenol as a disinfectant for human application had an initial burst of popularity but by the early 1900's, the toxicity of the unmodified molecule was recognized. In 1900, Harrington reviewed the literature and documented 132 cases of phenol poisoning which resulted in amputation on one or more fingers.[1]

Of the many attempted modifications of the molecule, the alkyl and chloro derivatives and the diphenyls achieved the greatest usefulness. The simplest of the alkyl group were the cresols which were usually combined with soaps. The most famous of these is the old stand-by, Lysol. The most commonly used of the halogenated compounds were halogenated diphenyls. Hexachlorophene is such a compound and is remarkable in that it retains most of its activity in the presence of high soap concentrations. In addition, it is one of the safest of the phenolics for human use. A number of other phenolics are on the market. Among these are Staphene, Amphyl, and One-Stroke-Vesphene.

There is still concern over the potential human toxicity of the phenolics. They have been incriminated in cases of severe depigmentation,[2] neonatal hyperbilirubinemia[3] and systemic toxicity for neonates,[4] and should be used only with great care and exactly according to manufacturers' instructions. There is evidence that they should not be used around neonates under any circumstances (with the possible exception of hexachlorophene under medical supervision).

One argument used to promote the use of phenolic disinfectants has been the supposed need to kill *Mycobacterium tuberculosis* on fomites. It is expected that those arguments will be heard more frequently as tubercular patients are admitted to general hospitals. A committee of the American Thoracic Society has concluded that tubercle bacilli on fomites do not constitute a significant infection hazard.[5]** Therefore, a justification for the use of phenolic disinfectants based solely on the need to kill *M. tuberculosis* is questionable.

The phenolics exert their lethal effects by orienting themselves at membrane interfaces causing damage, leakage of cell contents and finally cell lysis. Generally speaking, the phenolics will destroy vegetative bacteria (but not spores), most fungi, the tubercle bacillus and most viruses (hexachlorophene will not kill the tubercle bacillus nor will it inactivate the small non-lipid containing viruses).

Phenolics are moderately inactivated by organic soil and some types may be inactivated by soaps. Halving the concentration of some phenolics will result in a 64 fold increase in the contact-time needed for sterilization. Highly concentrated phenolic disinfectants are especially prone to this problem since an error of only ¼ ounce in dispensing some products (such as those products which are diluted ½ ounce to the gallon) will render the product essentially useless. The dispensing pumps supplied by some manufacturers may not be accurate and should be periodically calibrated.

---

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QUATERNARY AMMONIUM COMPOUNDS

These compounds represent a relatively new group of disinfectants. The compound, benzalkonium chloride, was first applied to the control of infectious agents in the middle 1930's by Domagk who is best known as the discoverer of sulfanilamide. His fame in developing this systemic antimicrobial has obscured his work with the quaternary ammonium disinfectants. Benzalkonium chloride is still widely used and known as Zephiran. The unmodified benzalkonium chloride molecule is useful under very limited circumstances, but has been chemically modified to produce a large and diverse group of cationic, anionic, and nonionic derivatives. Benzalkonium chloride has several disadvantages which limit its usage. For example, it is inactivated by heavy organic soil, and its antimicrobial activity is limited. It has little activity against *Pseudomonas aeruginosa*.

The newer quaternary ammonium compounds offer a broad spectrum of antimicrobial activity including most species of bacteria and a large number of viruses. Most of the newly developed quaternary ammonium compounds are not inactivated by detergents and can be used for cleaning lightly soiled areas without prior cleaning. They offer the significant advantage of being generally non-toxic, except in the most concentrated solutions and even then the toxicity to human beings is slight. There is generally more room for dilution error with the quaternary ammonium compounds than with the phenolic compounds. That there is little residual build-up of quaternary compounds on treated surfaces may be an advantage or a disadvantage, depending upon the particular application.

The quaternary ammonium compounds are surface-active agents which orient themselves at the cell membrane causing changes in the permeability of the membrane and leakage of cell contents resulting in cell death. Generally speaking, the quaternary ammonium compounds will kill vegetative bacteria, fungi and the lipid containing and medium sized viruses. They will kill neither bacterial spores, the tubercle bacillus nor the non-lipid containing or small viruses.

MISCELLANEOUS COMPOUNDS

Halogens. Chlorine and iodine are among the most useful disinfectants. They are unequaled for water and skin disinfection.

There are three types of chlorine compounds (other than the gas itself) useful in disinfection: the hypochlorites, inorganic chloramines and organic chloramines. Basically they all release free chlorine in aqueous solution to form hypochlorous acid which, in neutral or acidic solution, is a powerful oxidizer. The chlorine disinfectants are rapidly inactivated by organic material so surfaces must be cleaned before disinfection with chlorine products. The corrosive nature of halogens is well known and care should be taken that the eyes and skin of workers using halogens compounds are protected. *Chlorine products should never be used on stainless steel due to the corrosiveness of halogens which will destroy the finish of the steel leading to rusting.* Purex and Clorox household bleaches are effective, inexpensive and easily obtained chlorine disinfectants.

Iodine compounds are generally available in one of three forms. Aqueous iodine and alcoholic iodine solutions have been used for years as skin and surface disinfectants. They tend to be corrosive, irritating to the skin, staining and, in some individuals, allergenic. Iodine combined with various surface active compounds (Iodophores) have gained considerable acceptance. They are less irritating and generally do not stain permanently, but are less active than aqueous or alcoholic solutions. They are available under several brand names (Betadine, Wescodyne, Septodyne).

The halogen compounds are all oxidizing agents which exert their action by converting functional sulfhydral groups to the oxidized disulpho bridge, thus modifying the structure of proteins. The halogens will kill vegetative bacterial cells (but not spores), fungi, the tubercle bacillus and all groups of viruses. Iodophores may not kill the tubercle bacillus nor the small or non-lipid containing viruses. Product informations should be consulted before using for these applications.

Mercurial Compounds. Among the oldest of the disinfectant agents are the mercurial compounds. As early as 1881, the eminent physician/microbiologist Robert Koch, reported on the use of mercury chloride solutions for disinfection.[6] This compound was potent but also very toxic and was rapidly inactivated by small amounts of organic material and has fallen from use. The organic mercurials are still with us today in the form of merthiolate and mercurochrome.

Alcohols. The alcohols have been used for years to disinfect surfaces. Ethyl and isopropyl alcohols are the most commonly used and are most effective in 50-70% aqueous solutions. The alcohols are rapidly bacteriocidal on surfaces where they can reach the organisms. Isopropanol is considerably more active than ethanol, less volatile, and has generally replaced ethanol. The alcohols kill most microorganisms including the tubercle bacillus and most viruses, but will not kill bacterial spores.

Isopropanol will not kill the picornaviruses (polio, etc.). The alcohols exert their action by coagulating proteins.

Glutaraldehyde and Formaldehyde. Glutaraldehyde (2% alkaline aqueous solution) and formaldehyde (8% aqueous solution) are two very active disinfectants. While toxicity limits their usage, they are invaluable in certain situations. As a sterilizing solution for non autoclavable surgical instruments, alkaline glutaraldehyde (Cidex) has long been the standard soak. However, the activated solution tends to be unstable and is toxic. Glutaraldehyde has been suggested for sterilization of non-autoclavable or gas sterilizable items contaminated with hepatitis virus. A minimum 10 hour exposure time is required. Care must always be taken to see that air is expelled from tubular devices and that the lumens are flushed with the disinfectant.

Formaldehyde is no longer used much as a disinfectant, but occasionally is used as a fumigant. It is toxic, produces noxious fumes and is highly volatile. Both of these compounds are effective disinfectants killing both bacterial spores and vegetative cells, but when large numbers of spores are likely to be present, *soaking should be for 24 hours.* The concurrent use of heat may alter this time. In the absence of spores, sterilization may occur in as little as two hours.

These compounds kill fungi, the tubercle bacillus and all known virus groups.

SELECTION OF DISINFECTANTS[7]

1. Use the least toxic disinfectant which will adequately disinfect the area being treated. If the situation calls for disinfection of a critical item, or for the elimination of bacterial spores, choose a disinfectant such as glutaraldehyde or formaldehyde. Where large numbers of bacterial spores are not a problem, and there is concern about contamination of instruments by the tubercle bacillus, adequate disinfection can be accomplished using the halogens, alcohols, or the phenolic compounds. For disinfecting instruments not contaminated by the tubercle bacillus, by large numbers of bacterial spores, or by non-lipid containing or small viruses, disinfectants such as the newer quaternary ammonium compounds (other than benzalkonium chloride) might be employed.
2. The array of disinfectants on the market today is so vast that many have not yet been tested by a federal regulatory agency (Food and Drug Administration, Environmental Protection Agency, or the United States Department of Agriculture). *Select for use only those which can be shipped in interstate commerce and which contain a number issued by one of the above regulating agencies, preferably the Environmental Protection Agency.*
3. When considering a new disinfectant, ask for data which compares it with a well known germicide of the *same class.*
4. Before deciding to use a particular disinfectant, consider what material is to be disinfected, the degree of organic material present, the corrosiveness and toxicity of the product, the stability of the disinfectant, and the disinfectant's range of cidal action.
5. Ask for the manufacturer's report on local and, if applicable, systemic toxicity and allergenicity. This is especially critical if the preparation is to be used as an antiseptic.
6. Disinfectants should never be mixed with other products (i.e., a "quat" and a phenolic mixed) unless such mixtures are specifically approved by the manufacturer of both products. Soaps and detergents should *never* be added to disinfectants. Virtually all disinfectants are inactivated by some soap or detergent. Most general cleaning disinfectants contain appropriate amounts of suitable detergents or soaps and additional product should not be added.
7. Dilution should be exactly as directed on the

product label. Over-dilution of disinfectants (especially phenolics) will result in a vastly inferior disinfectant. Underdilution will result in damage to employees or equipment. □

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HEALTH CARE AND HOSPITAL COSTS

VINCE MOSELEY, M.D.*

With the increasing costs of medical care and services, so-called quality controls or containments are now being proposed or tried nationally and in South Carolina. President Carter has proposed an arbitrary 9% yearly ceiling for hospital costs and more recently, the Secretary of HEW has proposed one also for physicians' fees. To properly consider these recommendations, we should look at some statistics.

In 1976, health care costs, nationally, were $139.3 billion dollars, an increase from $122.2 billion in 1975. In 1976, in South Carolina, hospital rates similarly rose 7%. Of these, 40% or $55.7 billion were hospital costs and $26.4 billion were physician costs.

What accounts for the other $60 billion of the $139 billion of national costs? A look at manpower provides some answers. Forty years ago, physicians and nurses constituted the majority, but of the five million now employed in health areas, physicians number only about 350,000, which is an increase of about 40,000 since 1973. Nurses constitute about 800,000 and the other 3,850,000 consist of some 200 types of various technical and service employees of whom hospitals employ about three million and pay about $27 billion in wages, and 850,000 are employed in other areas. Since 1950, hospital employees have increased from one million to three million and wages from $8 billion to $27 billion.

Because of labor laws with strict adherences to a forty-hour work week, to provide full-time coverage in many hospitals five to six employees are now required for each position. That is, for each job requiring 24-hour coverage, three employees are needed for each 24 hours for five days and two to three additional employees are needed for weekends, sick leave and holiday coverage. For most hospitals, full coverage averages five employees of all types per bed.

There are 7,174 hospitals in the United States with 1,513,000 beds with an occupancy rate of between 60% and 80% averaging 75% at an employee cost of $27 billion. In South Carolina, for the average hospital, the wage costs for hourly employees has increased from $1.60 per hour in 1965 to $2.60 per hour in 1975, averaging about $45.00 per day per hospital bed, to which must be added costs for maintenance, utilities, food services, an average 3% depreciation cost, and in more recent years, a new cost of 24-hour police or security coverage. The average life for hospital equipment is 5 years and the average building life is 20 years. Extensive remodeling is usually required after that time. In South Carolina, the non-wage costs are approximately 51% of daily costs or $50 per day per bed. A minimum cost of

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$100 and more per day can, thus, readily be explained. Non-wage costs have increased in South Carolina by 50% since 1970. Inflation explains 54% of this increase. Requirements for new technology account for 34% of the increase and the remainder is due to rises in the cost of food, general supplies and utilities. Refusals by third party payers, and bad debts in 1975 amounted to a loss of $30,579,000 of revenues in 58 hospitals surveyed in South Carolina. Other increasing costs in hospital operations are those due to local, state and national operating standards and clerical requirements for reporting and recordkeeping. To name a few of the 100 or so agencies requiring reports and inspections, many overlapping, these include health planning laws, labor laws, equal opportunity employment requirements and reports in regard to race, sex, national origin and hiring of the disabled, tax and social security withholdings, disease control reports, atomic energy commission reports and various other state, local and HEW requirements. In addition, surveys by professional societies and organizations are repeatedly necessary to maintain hospital accreditation. The average 300 bed hospital spends in the neighborhood of $350,000 per year just on maintaining and reporting such data or $200,000,000 nationally. Filing for insurance benefit costs alone average about $5.00 per patient admission. Individual practicing physicians experience similar rises in administrative costs to handle third party payment forms and records.

In respect to the 34% of the increased costs relating to improvement or updating of hospital services, what advantages have individual patients received? To name a few:

1. More accurate diagnostic methods including those of x-ray, EKG-Electroencephalogram, Echo studies of sonar type and in chemistry laboratories.
2. Better care for accident and injury cases and in surgical risks.
3. Improved care and reduction of mortality for those with lung disease, heart disease, stroke, diabetes, kidney disease, cancer and bleeding or disorders of the blood.
4. Improved care of mothers and infants at high risk. (Reduced maternal deaths by 71% since 1960 and 39% of infant deaths.)
5. Improved emergency room and expanded outpatient care and anesthesia services.
6. Improved care for mental or emotional illness at the local level.

Life expectancy in 1976 has risen to 72 years, compared to 60 years in 1950. Despite the influenza outbreak in 1976, which increased the mortality in the elderly, a further decline of 3.3% in the death rate occurred. Infant deaths have declined by 39% in the past 15 years. Acute heart attack death rates are 15% lower than in 1969 and acute stroke deaths have declined from over 50% to less than 20% today. Improved services have reduced hospital length of stay by some 2½ days since 1970. However, in the meantime, hospitals have taken on the community responsibility of providing more outpatient services in the emergency and outpatient departments, with personnel and equipment costs.

What are hospitals in South Carolina doing to control costs? Overall wage costs continue to rise with the minimum wage requirements. In the non-wage cost areas, hospitals in S. C. have developed several cooperative arrangements. Some of these are in conjunction with the North Carolina hospital group. Sharing computer use with improved administrative planning and engineering services is one example. In 1975, some $2 million in savings occurred in 56 hospitals surveyed through these arrangements, and bulk purchasing resulted in a 10% savings overall in purchasing costs. During this period of rising costs, patient needs have changed. With our increasing older population, we have more chronic illness as infectious diseases have been essentially eliminated as significant causes of morbidity and mortality.

In 1967, the Medical University of South Carolina recognized a need to assist in the development of cooperative arrangements between hospitals in the developed trade areas of the state to share services and expensive diagnostic techniques and personnel and new methods for health delivery and to disseminate applicable new knowledge in the health services. The steps taken have been:

A. Through the South Carolina Regional Medical Program, from 1968 to 1976, provided funds and support for demonstration programs in health care and regional cooperative arrangements. These have included 162 programs in nearly every county in South Carolina directed to patients with heart disease, cancer, stroke, kidney disease, vascular disease, hypertension and diabetes and, more recently, programs to improve care of the newborn and for the extension of medical services in rural areas.

B. Development of regional hospital education programs begun in 1973 through the Area Health Education Center Program, Consortium Hospital Program and the Statewide Family Practice Residency Program.

C. Expanded efforts in continuing education in the health sciences and health services at all levels ranging from hospital wage earners in housekeeping, food services, and laundry areas and for technical and professional nursing and medical staffs, combined with on campus and off campus workshops, seminars, visiting professor programs and extension of similar activities. At MUSC in 1975-76, 5,900 were enrolled in CE: 3,977 were physicians, 1,304 nurses and 4,619 technicians or paramedical assistants.

D. Through use of the state ETV system as expanded in 1969. Closed circuit television and conference phone connections were established at 34 hospitals, and 13 regional public health offices, by which during 76-77, 43 hours each month of programs and in 77-78, 54 hours are broadcast. In 1978, two-way television will be established in four hospitals. Participants in the ETV Network include 540 physicians, 3,027 nurses, 2,064 technical and allied health and 7,658 para-medical and hospital staff enrolled in in-service training. Recently, 540 technicians participated in a 14 week refresher course. MUSC DCE distributed 1,500 video and 1,600 audio cassettes. Over open circuit ETV in 1976, an estimated public audience of 735,000 have viewed health information programs and 15,700 listened to FM radio health broadcasts. On cable TV, an additional 20,000 public viewers participated in health related programs over one cable system. Currently seven are participating.

Through the Community Hospital Resident Training programs, the number of physicians in family practice residency programs has increased from seven in 1971 to 140 this year and plans are for 201 to be trained each year by 1981. 71% have established themselves in practices in South Carolina; one third of those trained and who settled in S. C. were from out of state. In addition to the MUSC residents program in which 375 are enrolled, other residency programs at Spartanburg, Greenville, Columbia, Anderson, Greenwood and Florence now have 86 in training. State and federal grants support 40 full-time faculty at those institutions and 147 part-time faculty. Currently, 140 medical students and, recently, dental students spend some part of their undergraduate training in these off-campus programs. These programs will be expanded and will encourage more of our graduates to remain in S. C. and establish themselves in the smaller communities. Dental graduates are also moving into many of the smaller communities.

The problems which worry the public are ready access to service and, with inflation, rising costs. Thus the attempts at containment of services by various third party and governmental restrictions. Some of these problems can be met in large part by the communications systems now available but underused. Among these areas are:

1. Improved public awareness of available services and education for improved personal habits as preventive medicine.
2. Linkages to extend physician support and monitoring despite geographic, population limitations, and socio-economic restrictions in respect to home care and post-hospital care.
3. Improved physician management of emergency medical services.
4. Adaptation of telecommunications systems for assistance in consultation, physiologic and biochemical monitoring.

The establishment of high energy satellites modeled on the NASA, CTS and ATS 6 will permit a network of sending and receiving stations for video, audio and digitally transmitted information which can be linked for a number of purposes with rapid transmission, including computerized storage and retrieval systems. Relaying of information with high energy satellites now can be achieved with small up and down earth stations, simple to operate, low in cost, and requiring no more than an umbrella-sized antenna placed on the rooftop.

Alaska now uses a commercial satellite with this capability. In some 110 isolated locations, these services will be available providing opportunity for communication despite the sort of weather conditions which often interfere with land lines, radio, and line of sight microwave transmission.

Properly planned utilization of this type of system would permit cost sharing and ready availability of otherwise expensive technological and personnel resources. As examples, development of clinical laboratory networks, radiology consultation, professional consultation, information systems at a management level involving accounting, billing, inventory control, medical records, institutional supports and improved emergency services.

The technology is here. What is needed are plans for cooperative applications and shared use utilizing commercial systems. NASA has demonstrated the practicality and feasibility of such systems. It is now time for physicians and hospitals to intelligently apply these and deal with the recognized problems which, if not properly dealt with, will lead to imposed governmental controls. Such controls provide for economy but not quality.

The now-proposed restrictions on fees and hospital costs will not be an answer. Neither will the ever expanding number of regulations proposed by HEW and primarily directed at costs containments prove to be beneficial in any way except to decrease the number of hospital beds available for patient care. These are economic measures and not directed to improved patient care. National health insurance will increase the demand. The increasing numbers alone will increase costs as shown by the increasing utilization of health insurance benefits in the past ten years. Now 183 million people are covered by private or group insurance, not including those covered by federal programs.

In the past 25 years, the public in its perception of health has shown a loss of self-confidence. It has a fearful preoccupation and looks for magic cures, but without a sense of personal responsibility. There is an ever increasing number who are seeking professional care for trivial reasons at clinics and private physician's offices. The average Medicaid-supported American visits a physician five times a year, as compared with three or less by paying patients, visits the dentist two times a year, and has some eight prescriptions filled. The public also indulges in extensive self-medication by which some $3 billion alone is spent on over-the-counter remedies. Nor does this include the uncounted millions expended in seeking the services of cultists, faith healers, quack cures and various health fads and foods. Despite this preoccupation for seeking medical services, the public generally remains very indifferent in considering those things required through self-discipline, common sense and good habits in order to maintain health. We hear much about the public desire for preventive medicine, but immunization programs have shown a marked decline in recent years and nationally some 23% of school children were recently estimated not to have been immunized against measles, mumps, tetanus, whooping cough, diptheria or polio. During the past year, epidemic outbreaks of red measles and German measles confirmed this suspicion. Although acute heart disease and stroke deaths have been reduced, these continue to be the killers chiefly of the older population, which is increasing. The population over 65 now shows an annual increase of 10% each year. South Carolina's rate of increase is 8%, due to more of those in the younger age group than most states. After heart disease, stroke and cancer, accidents are now the fourth most frequent cause of death and between the ages of one and 38, are the number one cause of death. The physical effects of alcoholism ranks fifth in frequency for deaths, suicide is in ninth place, and murder is in tenth place. Motor vehicle accidents account for approximately 46% of all accidental deaths, which now occur at the rate of 12 each hour, or 288 a day or 106,120 a year. Nearly 50 out of each 100,000 population die each year from accidents and an ever increasing number are hospitilized for long periods. Alcohol is implicated in some 60% of vehicle accident deaths and also in a large number of other accidents. One fourth of all accidental deaths occur from home accidents and 12% occur at work. Added industrial costs in an amount now calculated at $25 billion per year are a result of alcoholism and drug abuse in workers. The sick benefits cost to industry for the alcohol and drug abusers amount to three times the sick benefit costs for other workers. Through neglect of self restraints and proper habits, individuals contribute to much preventable illness. Many health breakdowns relate to the increasing lack of parental control of children and juveniles and lead to ill health in later life. Improper behavior in areas of diet with poor nutrition, poor physical fitness, impaired mental health, sexual promiscuity and improper home and work environment are significant. As a result of sexual promiscuity, we have an increasing rise in venereal disease, a problem area which was thought to have been almost completely controlled 25 years ago. Excessive alcohol intake during pregnancy results in developmental defects with crippling and mental deficiency in an increasing number of babies. Heavy smoking during pregnancy results in underweight babies. *These are but a few areas where education and common sense would materially improve personal health. Regulatory laws and restrictions on hospital and physicians' charges will not be of benefit.*

Finally, I would like to point out as reported in the *U. S. News and World Report* that if the American public can afford to spend some $160 billion a year on leisure time activities, which article reported a rise of $102 billion in these expenditures since 1965 when it was $58 billion, and when one also finds that, in addition, approximately $60 billion is expended on tobacco, alcohol, jewelry, personal adornments and cosmetics, then certainly, though worthy of careful consideration, expenditures of $139 billion in health care should not, in anyone's judgement, constitute, in the words of the National Press and HEW, a crisis to the extent that regulatory laws of the type now being developed should be considered.

This so-called health crisis we have is one which the Federal government will use purely to gain more power and the politicians to get more votes. Regulatory requirements now cost $30 billion a year for the bureaus that administer them. Out of each eight hour work day for the individual citizen, taxes now take almost three hours of the eight hours of pay earned — food and drink, 1 hour; housing, 1½ hours; clothing, ½ hour; transportation, 40 minutes; medical care, 25 minutes; recreation, 21 minutes, and 1 hour of the pay is left for personal and disposable income or savings.

With the cost containments there will, of necessity, be a cutting back on the availability of hospital care and new diagnostic and therapeutic advances. How will this be beneficial to the older population or provide for better care and relief for the 27,000,000 with impairments due to cardiovascular disease, the 20,000,000 with mentally or emotionally crippling problems, the 4,000,000 with neurological disorders such as epilepsy and multiple sclerosis, the 20,000,000 arthritics, the 4,000,000 diabetics or the 3,000,000 cancer suffers? These are conservative estimates as to the number in our present population who have some impairment or crippling effects from these common clinical disorders. Will establishing the British or Scandinavian systems of fewer hospital beds with long waiting periods for admission really help the health of Americans or will we just end up spending less on alleviating pain and suffering and more on unemployment benefits?

In all of this physicians must adhere to our code of ethics and keep alive our ideals as expressed in the Hippocratic Oath. Patient care cannot be governed by battlefield triage tactics. □

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PUBLIC HEALTH CONSEQUENCES OF OUTER CONTINENTAL SHELF DEVELOPMENT

The following papers represent a summation of a symposium which was held at the 54th Annual Meeting of the South Carolina Public Health Association in June, 1977 on the Public Health Consequences of Outer Continental Shelf Development.

ON-SHORE IMPACTS OF OUTER CONTINENTAL SHELF (OCS) DEVELOPMENT

WINONA B. VERNBERG*
EUGENE A. LAURENT**

The outer continental shelf (OCS) is that part of the marine environment which lies adjacent to the continental slope and then the ocean deeps. The shelf varies widely in width and depth: in the Cape Hatteras area the OCS is 33 km wide, but between Charleston and Jacksonville it is 135 km wide, and water depth over the shelf area between Cape Romain and Cape Canaveral varies from 25-70 M.

Along the Atlantic coast, sedimentary deposits indicate petroleum potential in three areas: (1) the Georges Bank Trough off New England; (2) the Baltimore Canyon off the Mid-Atlantic States, and (3) the Southeast Georgia Embayment off South Carolina, Georgia and Florida. Studies indicate a possible petroleum site of slightly more than one million acres off South Carolina's James Island. This site is approximately 44-97 km off-shore in water depths of 29-90 M. Estimates of the amount of recoverable resources vary greatly, ranging from 0.28-1.0 billion barrels of oil and from 1.9-6.8 trillion cubit feet of gas.[1] Well drilling conducted from fixed platforms could begin within five years after the state of exploratory well drilling. Present time-scale projections indicate that peak production will occur sometime in the early 1990's and total production life of the fields is estimated to be approximately 25 years.

While OCS development will have some impact off-shore in the oceanic environment, there is little doubt that the on-shore impact will be much greater. Along the South Carolina coast there are only three possible on-shore development sites: Georgetown, Charleston and Beaufort. These coastal areas have undergone considerable change over the years; some of the changes were predictable, but most were not. A number of years ago few people dreamed that the coast would have more golf courses than marinas, $100,000 condominiums, or developments like Kiawah Island or Hilton Head. On the other hand, few people foresaw a disappearing oyster industry, that salt marsh would be valuable, or the demands for beach access.

If a substantial quantity of oil and gas is discovered off-shore, the future of the South Carolina coast will probably change again. New patterns of development will emerge that are difficult to foresee today. The population growth and economic development that have occurred already have changed the rules under which we operate, and our natural resources — land, clean air and water — are becoming scarce resources.

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CONSEQUENCES OF OCS DEVELOPMENT

Because one never gets something for nothing and because every choice we make regarding resources brings benefits only at the expense of certain (often unanticipated) costs, such choices are difficult to make. It is important to note that choices we make today about resources not only determine our immediate welfare, but also they determine the various options open to us in the future. Thus, the decisions made by various coastal areas today will determine, to a large extent, their ability to absorb OCS impacts in the future.

Changes in a local economy or local environment will affect various segments of the local population differently. While it is possible to predict how many jobs and how much income will be generated with OCS development, such figures mean little unless we know who is going to receive the jobs and income. Is it those who are already well off, or is it the locally unemployed? Similarly, the total amount of new taxes generated must be balanced off against the additional demands placed on local government in terms of hospital beds, school rooms and police protection. Consequently, the effect of any development on population structure will determine to a large extent the resulting impacts or pressures on such factors as the environment, education and health services.

Population changes that accompany OCS development have been well documented in other areas,[2] thus giving us a relatively good estimate of what can be expected in South Carolina. A small, limited find would increase coastal population projections by approximately 1%; a major find would increase projections to 6-7%. These percentages translate into 1,000-4,000 people. An urban area such as Charleston could probably absorb these increases without serious disruption, but the impact would be much greater in less populated areas along our coast.

The need to move inside the population totals and determine the impacts on specific segments of the population is especially important for South Carolina. For example, a substantial portion of our coastal population — maybe as much as 25% — is not part of the work force. For these people — mainly low income and fixed income families — the advantages from economic growth may instead prove to be disadvantages.

As development proceeds, the price of land, house rents and services tends to rise. For those people outside the economy, their standards of living will decline and they will face added hardships. Almost none of the efforts underway to estimate the OCS impacts, and none of the funding mechanisms available at the Federal level to alleviate adverse OCS impacts, address problems of this type or the general problem of differences in population structure.

OCS development will also raise problems in other health-related areas. The following two papers will address two of these: environmental health issues and the impact on administrative and social services. ☐

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CONSEQUENCES OF OCS DEVELOPMENT

HEALTH-AIR QUALITY INTERACTIONS*

H. McKELLAR**
L. TURNER**
W. BRANTLEY***

The possibility of off-shore oil and gas being brought ashore and processed in South Carolina has forced State planners to examine the overall costs and benefits of these future activities. One cost which must be evaluated is the cost of air pollution from possible petroleum industries and the corresponding effects on public health and welfare. As a first estimate in quantifying this health-air quality issue we have focused on existing air quality in South Carolina, the predicted impact of a single oil refinery, and the possible consequences with respect to local mortality rates.

Since the enactment of the Clear Air Act Amendments in 1970, there has been a general nation-wide improvement of air quality. However, concentrations of pollutants in many parts of the nation, including several areas in South Carolina, are still higher than the standards set by the Environmental Protection Agency for the protection of public welfare. Specifically, areas in Charleston and Georgetown still have annual mean concentrations of suspended particulate matter in the air which are above the EPA standard of 60 micrograms/m^3. Since these port cities are possible sites for on-shore development associated with OCS activities, particular concern arises over the fate of local and regional air quality.

The authors of the 1977 Draft Environmental Impact Statement for OCS activities (Department of Interior, Bureau of Land Management) predict that impacts on air pollution will occur due to construction activities, increases in transportation and corresponding vehicle pollution, secondary development associated with the increasing population, and by the operation of possible petroleum industries. While all of these activities will affect air quality to some degree, the greatest impact is expected to occur in the area surrounding oil refineries. A typical 200,000 barrel per day refinery emits significant quantities of all major air pollutants including suspended particulate matter (5 tons/day), sulfur dioxide (12 tons/day), nitrogen oxides (12 tons/day), carbon monoxide (1 ton/day), and hydrocarbons (35 tons/day).

The general area and magnitude of impact on ambient air quality can be predicted to some degree by the use of atmospheric dispersion models. Such models account for emission factors (rates, height, temperature and velocity) as well as local meteorological conditions to compute the increase in pollutant concentration over a given area around a source. Estimates of pollutant dispersion obtained from different models may vary greatly. The Air Quality Display Model used by the South Carolina Department of Health and Environmental Control predicts only slight impact at ground level from stack emissions by a single refinery unit. On the other hand, another currently accepted dispersion model, used by the Council on Environmental Quality (CEQ Report to the President on OCS Oil and Gas, 1974) predicts significant increases in ground level concentrations of all major pollutants. Without evaluating the validity of either model, we have used for discussion the results presented by the CEQ as "high" estimates of air pollution impact.

In their report, the predicted isopleths of pollutant concentration were given for an area of approximately 100 square miles surrounding the refinery. We calculated the areas covered by each concentration interval and weighted the concentrations accordingly to arrive at an estimated annual average increase in ground level concentrations over the entire 100 square mile area. This calculation indicated increases in total suspended particulate matter, sulfur dioxide and nitrogen oxides of about one to two micro-grams/m^3. In Charleston or Georgetown the increase of suspended particulates would be less than 2% of the present concentration. This small relative impact, however, could be significant considering that suspended particulate levels in these cities are already bordering or exceeding the national standard. Nitrogen oxides would increase by about 6% and sulfur dioxide, which is now well below the national standard in South Carolina, would be increased by about 40%.

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* This study was made possible through a grant from the South Carolina Lung Association.

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In terms of absolute quantity, the most significant pollutant emitted from an oil refinery are the hydrocarbons. These gaseous organic compounds act as primary reactants in the photochemical formation of ozone and other harmful compounds in smog. They are also suspected to be carcinogenic. The emission of hydrocarbons from an oil refinery occurs as "fugitive loss" or gaseous leaks from storage tanks and valves. In contrast to the other pollutants which are emitted through the refinery stacks, hydrocarbons are emitted at low velocities near ground level and may tend to accumulate in high concentrations around the refinery. According to model predictions given in the CEQ report, the average annual hydrocarbon concentration in the 100 square mile area surrounding a single oil refinery would increase by about 50 micro-grams/m^3. The predicted increase in the average *3-hour maximum concentrations* in this area would be around 350 micro-grams/m^3.

At present there is little quantitative information on regional health effects of hydrocarbons and little background data on hydrocarbon concentrations in South Carolina. In the future, close surveillance will be needed and strict sitings and operation controls should be considered in the event of refinery development in South Carolina.

The quantitative examination of long-term chronic effects of air pollutants on human health has been attempted by several researchers through statistical correlation of epidemiologic records with air quality data. Results from several comprehensive studies in the United States have established quantitative relationships between death rates and air quality indicators. Using the regression equations generated by two such studies[1, 2] we computed the estimated change in local mortality rates corresponding to the change in air pollutants around a refinery. The results of these calculations indicate that mortality from cancer, heart disease and tuberculosis in the area of a single oil refinery might increase by about 55 deaths per 100,000 people due to deterioration of air quality. If a refinery were situated in an area where the population density was similar to the average density in South Carolina, the total population within the 100 square mile area of impact would be around 9,300 people and the corresponding increase in mortality rate within this area alone would be around five people per year.

A recent study of industrial correlations with lung cancer[3] indicated that petroleum industries are among the high-risk industries with respect to lung cancer mortality. In addition, the same study showed that Charleston County was among the top 3% of the counties in the United States in terms of high rates of lung cancer mortality. Thus, the relationship between oil refineries and health in South Carolina is a critical issue. The predictions presented here are obviously rough and do not account for air quality impacts of other OCS-related activities or the health effects of secondary air pollutants such as ozone and sulfates. Hopefully, such examinations will be refined and used in the total evaluation of OCS activity in South Carolina ☐

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CONSEQUENCES OF OCS DEVELOPMENT

IMPACT ON SOCIAL AND ADMINISTRATIVE ASPECTS OF RESOURCE MANAGEMENT

HARDY WICKWAR*

THE PROBLEM

We know there are oil and gas in the Outer Continental Shelf off the coasts of South Carolina and Georgia. On the other hand, we do not know how much, or whether they will be worth exploiting, or how long they might last, or whether they would be best exploited from South Carolina or from Savannah. This is our problem: we have to be ready to cope with a possibility, and indeed a high probability, of something occurring of which we do not yet know the dimensions, the location, the duration or the cost. This makes it all the more important to do some hard thinking before Fate comes knocking at the door.

DIAGNOSIS

Unlike solar energy or nuclear fusion, oil and gas from the OCS do not offer a permanent solution to our energy needs. Instead they pose the problems inherent in every irreversible exploitation of a non-renewable resource. If this hits us, we may expect two impact waves. The first would be the short-term boom and bust of building or towing construction platforms. The second would be the medium-term rise and peak and fall of storage and refinery. Both ways we have to cope with problems that will come and go in a few years or a few decades.

These two problem waves do not have to occur in the same locality. The building or towing of construction platforms would naturally locate in the vicinity of existing seaports such as Charleston or Savannah if suitable sites are made available, or at some new and hitherto non-urbanized site as on the Port Royal Sound. On the other hand, the refineries and the industries that might grow up and flourish for a while around them might just as well be in what is still comparatively open country some way back from the coast, in Berkeley, Dorchester, Colleton or Jasper county, because oil and gas are easily transportable.

These developments are bound to make big demands on the facilities and services that make up the collective "infrastructure" on which individual businesses depend. Economically, oil and gas will need seaports, airports, heliports, highways, energy, and industrial parks. Socially, they will need health care, hospitals, schools, housing, recreation and even, if air pollution rises, cemetery space.

PROGNOSIS

It will probably be very difficult for most impacted local communities to meet these needs. The smaller the local community, the bigger the impact. Moreover, it will be a "front end" impact: the infrastructure will be needed before the new property taxes come in.

The recently invented administrative agencies that cover more than local areas are no better fitted for handling these problems. Coastal Zone Management will be geographically limited to areas near tidal navigable waters: it will not cover the wider area subject to 100-year flooding as delineated on the new maps of the National Oceanographic and Atmospheric Agency, although it is on the higher ground inland that it would be wisest to build the refineries and related industries and the housing and health and social facilities needed by their workers. Councils of Government handle federal research funds but have no financial or other power to directly influence development. Coastal Plains in each state can influence developments by means of capital grants, but is ill equipped for developing plans to guide it in grant allocation. Health Systems Agencies are so narrowly specialized in health and health service institutions that they are unlikely to have much impact on other services and facilities on which health largely depends, although they ought at least be able to steer Hill-Burton money towards health care institutions in impacted counties, perhaps with more system than in the past.

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The alternative to positive action on the part of a competent authority would be the customary attempt to make a killing on the part of state and local real estate developers and their friends doubling as politicians, using their public powers to enhance their private profit.

TREATMENT

It is, therefore, beginning to look as though one way of enabling us to face this probable challenge of a sudden but temporary outburst of feverish activity in a reasonably effective way may be a program that earmarks a share of the lease rentals or royalties paid by the gas and oil exploring and leasing corporations and uses these funds to help impacted local communities set up the infrastructure of health care and other social and economic facilities that they may need, but does this according to a sensible and economical plan which this program would take the initiative in developing in full consultation with all concerned.

Here is a rare opportunity to think about things that are likely to happen, well in advance of their occurring and to create the atmosphere and environment most conducive to most people being helped and least people being hurt.

What is involved is the management of scarce resources: on the one side the natural resources we have inherited from earlier ages in this planet's history, but also on the other side our own limited fiscal and institutional resources that have to be invested in the facilities and services without which it is impossible to exploit the natural resources.

Episodic treatment and no treatment are not necessarily the best or the only ways of building a healthy social environment. □

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Actions. Antiminth (pyrantel pamoate), has demonstrated anthelmintic activity against *Enterobius vermicularis* (pinworm) and *Ascaris lumbricoides* (roundworm). The anthelmintic action is probably due to the neuromuscular blocking property of the drug.

Antiminth is partially absorbed after an oral dose. Plasma levels of unchanged drug are low. Peak levels (0.05-0.13 μg/ml) are reached in 1-3 hours. Quantities greater than 50% of administered drug are excreted in feces as the unchanged form, whereas only 7% or less of the dose is found in urine as the unchanged form of the drug and its metabolites.

Indications. For the treatment of ascariasis (roundworm infection) and enterobiasis (pinworm infection).

Warnings. *Usage in Pregnancy:* Reproduction studies have been performed in animals and there was no evidence of propensity for harm to the fetus. The relevance to the human is not known.

There is no experience in pregnant women who have received this drug.

The drug has not been extensively studied in children under two years; therefore, in the treatment of children under the age of two years, the relative benefit/risk should be considered.

Precautions: Minor transient elevations of SGOT have occurred in a small percentage of patients. Therefore, this drug should be used with caution in patients with preexisting liver dysfunction.

Adverse Reactions. The most frequently encountered adverse reactions are related to the gastrointestinal system.

Gastrointestinal and hepatic reactions: anorexia, nausea, vomiting, gastralgia, abdominal cramps, diarrhea and tenesmus, transient elevation of SGOT.

CNS reactions: headache, dizziness, drowsiness, and insomnia. Skin reactions: rashes.

Dosage and Administration. *Children and Adults:* Antiminth Oral Suspension (50 mg of pyrantel base/ml) should be administered in a single dose of 11 mg of pyrantel base per kg of body weight (or 5 mg/lb.); maximum total dose 1 gram. This corresponds to a simplified dosage regimen of 1 ml of Antiminth per 10 lb. of body weight. (One teaspoonful=5 ml.)

Antiminth (pyrantel pamoate) Oral Suspension may be administered without regard to ingestion of food or time of day, and purging is not necessary prior to, during, or after therapy. It may be taken with milk or fruit juices.

How Supplied. Antiminth Oral Suspension is available as a pleasant tasting caramel-flavored suspension which contains the equivalent of 50 mg pyrantel base per ml, supplied in 60 ml bottles and Unitcups™ of 5 ml in packages of 12.

More detailed professional information available on request.

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Editorials

IMPROVING RELATIONSHIPS BETWEEN DHEC AND SCMA

Over the past few years the private practicing physician and the Department of Health and Environmental Control have been at odds over several issues. It was obvious that an unhealthy dichotomy was taking place between private and public sections of medicine. Such issues as drug dispensing, early and periodic screening and diagnostic testing (EPSDT), regulation and control, private pay plan of DHEC and health planning began to surface as problem areas. Severe conflicts between private (personal) and public health ensued. In an attempt to build a favorable relationship, considerable communication was carried on between the South Carolina Medical Association (SCMA) and the Department of Health and Environmental Control (DHEC) all to no avail. An ad hoc committee was formed by SCMA with the purpose of improving relationships between DHEC and SCMA. Several months passed and several meetings were held with DHEC staff members and board members. Four subjects continued to be the major topics of most meetings: the need for a mutually agreeable definition of private (personal) medical care compared to public health services; the establishment of a liaison committee of SCMA leaders and representatives of DHEC; the revamping of DHEC's Health Care Advisory Council; and, the establishment of appropriate staff personnel to carry on day-to-day communications. Through open and frank discussions, much improvement in the deteriorating relationship has been seen through the past few months.

In an effort to delineate areas of responsibility of DHEC and the private sector, a mutually agreeable definition of public health compared to private (personal) health was considered. It was the general feeling that some of DHEC's activities exceeded a public health role and approached a public medicine role. It was felt by both SCMA and DHEC that no such definition would be necessary if the two parties were to work together toward common goals. It was felt to be far too difficult a task to try to completely segregate the two approaches to health care delivery in South Carolina.

The belief that a formal liaison committee of SCMA leaders and DHEC representatives be established finally became a reality. It was agreed that this liaison committee would meet at least semi-annually to consider pertinent policy matters. All indications point toward the evolution of an advisory type subcommittee being formed composed of physicians who presently perform services with DHEC through such programs as crippled children, maternal and child care, etc. These sub-committees would work primarily toward providing input into these programs to improve and support the programs that meet unmet needs.

Redefining the role of the DHEC Health Care Advisory Council appears to be close at hand. It was the opinion of the SCMA that this Advisory Council should actually participate in the planning phase of all new programs and proposed regulations. The Department of Health and Environmental Control's staff agreed to do a study of the existing Health Care Advisory Council as to their involvement and effectiveness in DHEC planning. It is not inconceivable that a restructuring of the Health Care Advisory Council will be forthcoming, thus allowing proper participation in the planning of all DHEC programs and regulations from the private sector of medicine. Pertinent SCMA staff and DHEC staff personnel have been designated in an effort to broaden the day-to-day communications between these two bodies. Through the efforts of staff personnel, it will be possible for both DHEC and SCMA to stay abreast of pertinent developments in health care delivery in South Carolina.

Several other important areas have been discussed with optimistic results. DHEC's drug dispensing policy has come under much criticism. Section 40-33-30, CODE OF LAWS OF SOUTH CAROLINA, 1976, provides a special privilege to DHEC's registered nurses permitting them to dispense certain drugs *after* original diagnosis and treatment has been prescribed by a physician. It has been pointed out that a drug formulary committee has been developed by DHEC to review and revise the policies and procedures of drug dispensing by DHEC.

Additional areas of concern to both parties that have been discussed deal with the nurse midwifery program, DHEC contract physicians, health assessment and physician examination courses being required of certain public health nurses. All of these areas have been discussed and are being examined closely by both parties.

The EPSDT screening program has also received much debate by both parties. It was soon pointed out, however, that the Department of Social Services requested that DHEC contract with the Department of Social Services to do the screening for the Medicaid EPSDT program. Heretofore, the Department of Social Services had restricted private physicians from participating in this program, allowing screenings only to be performed in DHEC health centers, most often by nurses. The SCMA's Ad Hoc Committee has worked very closely with DHEC through their Bureau of Maternal and Child Care; and it appears that with DHEC's support, the private practicing physician will soon be allowed to participate in the EPSDT screening program.

The Department of Health and Environmental Control has recently undergone some top level personnel realignment. Even during these critical periods, the willingness of the DHEC staff and board to work with the South Carolina Medical Association remained obvious. The South Carolina Medical Association was asked to provide the DHEC board with the criteria the private practitioners felt should be met in selecting a new DHEC commissioner. This was prepared and presented to the DHEC board which studied it very closely. A meeting was set up with members of the SCMA Council to discuss this criteria with the consulting firm hired to search for the new DHEC Commissioner. When the final decision was reached, Albert Gibbons Randall, M.D., M.P.H., was selected as the new DHEC Commissioner. Dr. Randall's resumé followed very closely the criteria that had been submitted by the SCMA. Dr. Randall took over the South Carolina Department of Health and Environmental Control on or about November 14, 1977.

Considerable time has passed since the initial meeting with DHEC by this Ad Hoc Committee; however, considerable gains have been made. As Chairman of the Committee, I look forward to meeting and working with Albert Gibbons Randall, M.D., M.P.H., the new DHEC Commissioner.

Both the public and private sectors have a responsibility to the people of the state and both are desirous of having excellent medical care and health services rendered. So that the maximum good might be obtained at a minimum cost, it is adamant that both of us work together without duplication and without competition. This is the attitude of the committee and this should be our goal.

Harrison L. Peeples, M.D.
Chairman, Ad Hoc Committee
on Relationships with DHEC

PHYSICIANS AND THE ENVIRONMENT

The very last sequence of Li'l Abner, which appeared in the funny papers on November 13, 1977, pertains to our topic. Fearless Fosdick grapples with a flock of ferocious vultures, sent over by the Environmental Protection Agency to rid a lady's farm of spiders. How, next, do we get rid of the vultures? The genius at the Environmental Protection Agency proposes to send over some vulture-eating jackals . . . then, to get rid of the jackals, he'll send over some man-eating tigers, then. . . .

Disgusted, the lady proclaims that she'll sell the farm and move to Tibet, where hopefully there are no such geniuses in "*their* Environmental Protection Agency." Finally, in the very last frame, as Al Capp bade farewell to his devoted readers of 43 years, Fosdick shoots another vulture and says of the Tibetans: "I doubt the poor souls even *have* an environmental protection agency."

Environmentalists, like the rest of us, tend to take themselves too seriously. But it has become a truism of our times to declare that we cannot afford to ignore the issues which concern them. Physicians should appreciate the long-range implications of such issues, perhaps better than most of the population, by virtue of their training, since such appreciation hinges on the biologic interpretations of cause-and-effect. We may have mixed emotions about the survival of the red-cockaded woodpecker versus the need for lumber, or the survival of the loggerhead sea turtle versus the need for resort areas and seafood. But it is difficult to believe that chemicals in our waters which cause defective ovulation in ospreys do not cause harmful, it subtle, effects in man. Many issues of our time have heavy meanings not only for individual humans, but also for man as a species. Physicians, from their *immediate* experiences, can appreciate the implications of both minor and major alterations of our most precious possession, the gene pool.

A summary of a major symposium on the public health consequences of outer continental shelf development appears in this issue of *The Journal*. The need for fuel is obvious, and the reader will note that the participants in the symposium do not debate *whether* the shelf should be exploited. Rather, they discuss the on-shore consequences of this development, helping us brace for the inevitable future shock. The coastal wetlands of South Carolina contain 27 percent of the salt marsh of the entire Eastern seaboard, and provide the biologic source of much of what we associate with "the good life." Already, Drs. McKellar, Turner, and Brantley note, some areas along our coast have an unacceptable level of air pollution, and data suggest that a single oil refinery might increase the death rate by 55 per 100,000 population. The relationships between environment and man become inextricable, and it is a truism, again, to conclude that "the relationship between oil refineries and health in South Carolina is a critical issue."

Practicing physicians and the Department of Health and Environmental Control have not always agreed over some issues, as Dr. Harrison Peeples discusses in his editorial, above. We should have little quarrel with efforts of DHEC in *environmental control*. The unique role of private physicians is the care of *individual patients;* the unique role of public health is the care for *populations of individuals*. The triumphs of public health are triumphs for *populations;* the disasters are disasters for *populations*. The issues which concern Dr. Peeples' committee are issues mainly of *health of individuals*. Few, if any, of these issues deal with *environmental control*.

Environmentalists have been heard to complain that DHEC has, in recent years, placed too much emphasis on the issues of *health of individuals* and too little emphasis on the issues of the *environment*. They complain that appointments to the DHEC Board have gone mainly to industrialists (or more recently, to oral surgeons), rather than to persons with proven qualifications in environmental matters. We suggest that the problems posed by conflicts over the drug formulary, the nurse midwife program, and the EPSDT screening program — to name a few

— will seem small, even petty, in the eyes of future generations. Their lasting concern will be with what *our generation* did about the environmental issues of our day.

Our environment is fragile. Physicians, with strong beliefs in cause-and-effect, should support a more active Department of Health *and Environmental Control* (italics ours).

— CSB

REPORTING OF DISEASES

Reporting of certain diseases by physicians provides valuable information to both practitioners and to epidemiologists, and in some instances is required by law. It is often conceded, however, that the present system of reporting by postcard has serious limitations, and adds to the busy physician's paper work.

Several states have found that active solicitation of reports by the health department works efficiently. The epidemiologists at the Department of Health and Environmental Control (DHEC) advise us that they are considering this alternative, and they seek our suggestions. One clerk in each health district would poll, by telephone, the offices of selected "sentinel physicians." Any physician willing to take part could serve as a "sentinel physician," and could tabulate cases of "notificable diseases" by any method which would suit his office routine. Additional reporting would be solicited by infection control nurses, clinical pathologists, and microbiology laboratories. Prompt analysis of the information gleaned from this system would alert physicians to local problems.

Physicians with interest in such a system, or with ideas or criticisms, should convey their thoughts to Dr. Richard C. Rose III, Acting Director, Division of Investigation and Control, Bureau of Epidemiology, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, S. C. 29201.

— CSB

REFERENCE

1. Marier R: The reporting of communicable diseases. Amer J Epidemiol 105: 587-590, 1977.

INFORMATION FOR AUTHORS

We encourage original articles and letters to the editor of potential benefit and interest to the members of the South Carolina Medical Association.

CORRESPONDENCE: All manuscripts and correspondence should be addressed:

The Editor
JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
Post Office Box 11188
Columbia, S. C. 29211.

COPYRIGHT: All manuscripts should be accompanied by a transmittal letter to the editor, which should contain the following paragraph:

> "This original work has not been submitted or published elsewhere, in entirety or in part. I (we) hereby transfer, assign, or otherwise convey all copyright ownership to the South Carolina Medical Association in the event that this work is published by the SCMA."

The above takes into account *The Copyright Revision Act of 1976*, effective January 1, 1978. We request authors to advise the editor of any prior or anticipated duplication of their work in other publications. Submission of material as a "companion article" to material submitted elsewhere is discouraged.

PRIORITY FOR PUBLICATION: We give priority to the following categories: (1) concise review articles of clinical topics; (2) case reports and other original observations by practicing physicians; (3) articles devoted to social, economic, or ethical topics; and (4) information from government and other agencies pertinent to the health care of South Carolinians.

Of lower priority, but still welcome for consideration, are articles in the following categories: (1) historical or philosophical essays, and (2) original scientific investigations of a specialized nature.

LENGTH OF ARTICLES: We prefer concise articles of approximately 2500 words (approximately 8 typewritten pages, double-spaced), with no more than ten references.

We regret that space considerations limit our ability to publish longer articles, and request that authors adhere to the above guidelines. Similarly, tables and illustrations (see below), should be kept to a minimum, and be specific and pertinent.

MANUSCRIPTS: These should be typewritten, double-spaced, and on one side of the paper. The original and one copy should be submitted. The title page should indicate the title, author(s), author's address, and academic appointments, if any. We request that the author's name not appear on subsequent pages, to permit "blind" review of the article, when desired. Authors should retain one copy for use in proofing.

ILLUSTRATIONS: These should be submitted as glossy, black-and-white prints no larger than a standard page; smaller prints are desired. Ordinarily, publication of 4 small illustrations or tables, or the equivalent, will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should not be mounted, stapled, or clipped. On the back side of each illustration, the article title, figure number, and top of figure (but not the author) should be noted lightly in pencil. Legends for illustrations should be typed on a separate sheet of paper.

REFERENCES: These should be cited consecutively in the text, in superscript, e.g., "Kaunitz and Lindenbaum[3] . . ." We recommend no more than ten references, selected from more recent publications in accessible journals in most instances. When an extensive bibliography is desired, this can be accomplished at the author's expense or by noting that "additional references are available from the author upon request." Standard journal abbreviations should be used, with the style for journal articles being as follows:

3. Kaunitz JD, Lindenbaum J: The bioavailability of folic acid added to wine. Ann Intern Med 87: 542-545, 1977.

REVIEWING AND RESPONSIBILITY TO READERSHIP: We will make every effort to review manuscripts promptly. All manuscripts will be reviewed by our editorial office, and when indicated the opinions of outside consultants will be solicited.

We welcome criticisms of journal content by members of the South Carolina Medical Association.

REPRINTS: These will be made available by the publisher at established rates, at the time of mailing of galley proofs.

ERRATUM

Astute readers may have noted that the liver scan shown in Figure 2, page 421 in the October 1977 issue (Cathcart RS III and colleagues: Spontaneous rupture of the liver in pregnancy) was improperly positioned.

LETTERS TO THE EDITOR

TO THE EDITOR:

The Board of Pharmaceutical Examiners of South Carolina recently requested a meeting with the State Board of Medical Examiners concerning several matters of interest regarding physicians writing prescriptions. The Pharmacy Board met with us on October 26, 1977; and after pointing out several problem areas, they volunteered sending a letter pointing these matters out in detail and ask that it be distributed to physicians practicing in the state.

The letter was received recently, and I am forwarding it to you to request you publish it in the *Journal.*

If you have any questions or thoughts regarding this matter, please give me a call.

Sincerely,

Vernon E. Merchant, Jr., M.D.
President, State Board of
Medical Examiners

Mr. Nathaniel B. Heyward, Executive Director
State Board of Medical Examiners
1315 Blanding Street
Columbia, S. C. 29201

Dear Mr. Heyward:

This letter is in reference to the meeting between this Board and the Board of Medical Examiners on October 26, 1977 at Columbia, South Carolina.

The Board of Pharmaceutical Examiners requested the meeting on October 26th due to the concern of the Board and the practicing pharmacists of this state relative to various prescription writing habits of some physicians in this state.

Some physicians are issuing "pre-signed" prescriptions by signing a number of such forms prior to going on vacations, etc., with the office staff issuing the so-called prescriptions at a later time to patients in the physician's absence. Pre-signed prescriptions are not prescriptions within the meaning of the law and thus are illegal.

Some practitioners are allowing non-licensed persons in their employ to sign the practitioner's name to prescriptions with the non-licensed person's initials after the practitioner's name. Only persons authorized by the Medical Practices Act of this state can sign prescriptions. Such authority cannot be delegated and such so-called prescriptions are not legal.

In some parts of the state, pharmacists are receiving prescriptions telephoned by optometrists and a physician covers the prescription with his authorization later. In these cases, the physician never sees the "patient." Optometrists cannot issue prescriptions for any type of medication and any medication that is dispensed by a pharmacist on such authorization when the covering physician has not seen the patient is misbranded.

On many occasions, the pharmacists are receiving prescriptions which bear a stamped signature of a practitioner. If a practitioner issues a prescription in writing, it must be signed by the practitioner.

A great many physicians are issuing multi-prescriptions on one prescription blank. I have seen as many as five such prescriptions on a single prescription blank. Not only does such practice cause a filing problem, but the chance of error by the pharmacist is increased.

Another problem pharmacists find in some parts of the state are prescriptions with directions-for-use check-off lists on the back of the prescription blank. In such cases, only a number is used for directions by the physician and the directions on the back of the prescriptions are checked against such number. The chances for error, both by the physician and the pharmacist, are multiplied greatly by the use of such a method. This practice should be stopped.

Some physicians issue prescriptions on "blank" prescription blanks, that is, such blanks do not have the name of the physician imprinted on the blank. In such cases, the physician writes the prescription and then signs it with an illegible signature. If such prescriptions emanate from a hospital or clinic, there is no way for the pharmacist to contact the prescribing physician because he cannot read the signature. In such cases, it is suggested that the prescribing physician also print his name on the blank for easy identification.

Another problem of universal latitude is the completely illegible prescription.

It is respectfully requested that this information be brought to the attention of each person licensed to practice medicine in this state.

Sincerely,
John L. Wilkie, Jr., Exec. Secy.

President's Pages

THOUGHTS ON THE AMA MEETING

I have just returned from the 1977 Winter Meeting of the American Medical Association in Chicago, and I came back with the following impressions.

First, the South Carolina Medical Association is well-represented at the American Medical Association House of Delegates. The schedule of activities is exhausting, with the meetings of the House and the Reference Committees which have to be concerned and speaking to the issues, and last, but by no means least, with the social activities at which a great deal of the politics are decided.

Second, it is quite apparent that even though we are all physicians, geography has a lot to do with the philosophy of the physicians in the United States. We in the south and the ones from the midwest tend to support the conservative viewpoint, while those from the northeast and west tend to be more liberal. In addition, New York, New Jersey, Pennsylvania, California, Massachusetts and Connecticut usually vote together, and it is obvious this represents a large bloc of votes.

Third, notwithstanding our difference in philosophy with some of the other regions of our country, it is my opinion that the American Medical Association is a democratic organization where all views are heard and considered, and with all of its faults does represent the American physician, not necessarily as an individual, but as a group. This one voice, speaking for all physicians in the United States is right; and although some will disagree, it is considered by most observers to be effective.

Last, I would like to report on the American Medical Association Headquarters which we toured. It is a headquarters I am sure you would be proud of, and if you have not visited it, be sure to do so if you are in Chicago and have an opportunity. In addition, I was impressed with all of the services the AMA offers to the members of the federation, and we hope we can take advantage of many of these in the future.

Join your local medical society!
Join the South Carolina Medical Association!
Join the American Medical Association!
Be a part of organized medicine!

Waitus O. Tanner, M.D., President

AUXILIARY PRESIDENT'S PAGE

The following is a letter sent to Auxiliary Members to bolster Project Immunization.

Elise Cain, *President*

OPEN LETTER TO ALL MEMBERS OF THE SCMA AUXILIARY

Dear Fellow Members:

Some of us are old enough to remember the sleepless nights and torment of seeing our children fighting for breath during a whooping cough epidemic. We remember sharing the grief of a neighbor whose child had died from the complications of measles, watching a friend struggling to walk with braces because he or she was one of the lucky ones who survived poliomyelitis, or seeing a new-born infant whose mother had no immunization against the rubella she contracted in her first three months of pregnancy.

All these memories should be things of the past, but the medical profession is painfully aware that some people are not bothering to make sure their children are immunized. Some are indifferent, some are too ignorant, some think they can't afford it, and some are just procrastinators.

It doesn't matter what their reason, the AMA is concerned and asking for our help to make the public aware of the problem. They are sponsoring radio and TV spots and have sent hop-scotch stencils to all auxiliaries in the nation. (If you did not get one, please order it from Gilbert S. Martin, Office of Public Relations, American Medical Association, 535 N. Dearborn Street, Chicago, Illinois 60610.) Please don't leave it in your cupboard rolled up. Straighten it out and start running it off on playgrounds, sidewalks or floors. If you meet opposition to this, present them with a wall hanging of it on cloth or brown paper.

This is our main Community Health Project for the state this year. No prizes are to be awarded for a job well done, just the satisfaction that we may have helped a child.

Here's to scotching childhood diseases.

Monteze Snyder and Joan Parkinson,
Community Health Chairmen

SOUTHERN SOCIETY OF ANATOMISTS 17TH ANNUAL MEETING

The Southern Society of Anatomists 17th Annual Meeting was held October 26-29, 1977 at Meharry Medical College, Nashville, Tennessee. Presiding was Calvin L. Calhoun, Sr., M.D., then President of the Society. Official abstracts of the meeting follow.

ANDERSON, G. S., S. D. CANADAY, AND W. J. DOUGHERTY. Department of Anatomy, Medical University of South Carolina, Charleston, South Carolina. *Frog (Rana pipiens) parathyroid glands in organ culture: a radioautographic and bioassay study.*

The current study was designed to determine whether Amphibian parathyroid glands grown in culture for two weeks are living and functional. Individual glands were cultured on Millipore filter rafts (Sawyer, *et al.*, 1977).

Five microcuries of H^3-thymidine were added to each culture dish 24 hours prior to the end of the (one and two week) experiments. Glands were then fixed and processed for radioautography. Light microscopic observations revealed the presence of (reduced) silver grains over the nuclei of many cells. Labelled nuclei appeared throughout the parenchyma of the gland although the labelling was heaviest in the periphery.

Bone for the bioassay experiments was taken from frogs that had received intraperitoneal injections of Ca^{45} (10 microcuries per gm. body weight) seventy-two hours prior to their sacrifice. Labelled bone fragments (approximately 1.5 mm^2) were placed adjacent to homozygous parathyroid glands, adjacent to small pieces of liver, or alone. The media was changed and "monitored" after 24 and 72 hours. Levels of Ca^{45} found in the culture medium of the parathyroid-bone combinations were significantly higher than those found in the control cultures.

AULSEBROOK, L. H. and A. M. BURT, Department of Anatomy, School of Medicine, Vanderbilt University, Nashville, Tennessee. *A neurohistologic study of the ataxic mouse midbrain and hindbrain.*

An inbred colony of C57BL/6J strain of mice with the ataxic mutant recessive gene (ax^J) has been maintained in our laboratory for two years. Brains from affected mice (ax^J/ax^J) and normal littermates ($+/+$ or $+/ax^J$) as controls were removed at various ages for histological studies. Various routine procedures were used for fixation and embedding depending upon the staining method desired, and slides of serial sections of all brains were made for these comparisons.

To our knowledge, only one other study (D'Amato *et al.*, Arch. Path. *80:* 604) of this ataxic brain has been reported and one of their conclusions emphasized the cerebellum and Purkinje cell involvement in the motor disturbances. Our observations confirm most of the results reported, but extend the findings and show differences in perikaryal morphology not reported by these workers. Only the latter are summarized here. The neurons and their nuclei in ataxic brains vs. controls are smaller for the substantia nigra, pontine, medullary gigantocellular and lateral and medial cerebellar, and mesencephalic and chief trigeminal nuclei. Some lower motor neurons and neurons in the inferior olivary nucleus are larger in ataxic brains vs. controls. Some other extrapyramidal nuclei, e.g., red and interpeduncular nuclei, show early morphological deficits (decreased cell diameter and hypertrophied nucleus) which appear to reverse with age. Results of the study of ataxic mouse forebrain are presented here by Burt and Aulsebrook. (Partially supported by funds from Biomedical Research Support Grant RR-05424.)

BAKER, JAMES, Department of Anatomy, School of Medicine, University of Maryland, Baltimore, Maryland. *Compensatory Changes of Skeletal Muscle Following Tenotomy.*

When the fibers of the soleus muscle of the cat are immobilized at different lengths, sarcomere length is adjusted by the production or removal of sarcomeres (J. C. Tabary, *et al.*, *J. Physiol. 224:* 231-244 (1972).

Following section of the proximal and distal tendons of the soleus muscle of the rat, the muscle shortens until it is only ½ to ⅔ the length of the contralateral soleus. Experiments were carried out to discover whether, under these conditions, a similar adjustment of sarcomere length occurs, after reattachment of the tendons at the muscle's shortened length.

The proximal and distal tendons of the soleus muscle were severed in 10 mature female rats. Five of the rats were sacrificed one day following tenotomy and the rest, at the end of one month. Sarcomere lengths of soleus fibers of unoperated rats were determined as well as those of the experimental animals.

The sarcomere length of the shortened soleus fibers removed one day following tenotomy had decreased by 30% when compared with the sarcomere length of the unoperated soleus fibers. However, after one month the fiber sarcomere length of the reattached shorter soleus had returned to normal. The muscle following tenotomy had thus readjusted to its new functional length.

BOYDSTON, W. R., R. K. HOLT, and G. S. SOHAL, Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *Identification of the trochlear neurons by retrograde transport of horseradish peroxidase.*

Due to abundant collateral sprouting in the developing trochlear nerve, axon counts failed to establish whether the trochlear neurons which die during development had sent their axons to the periphery prior to their death. Additionally, that investigation assumed that all trochlear nerve axons have their cell bodies within the discrete area of the nucleus and also that the earliest time of muscle innervation could not be determined. Objectives mentioned above were sought by using HRP. HRP was injected into the superior oblique muscle of duck embryos from day 7 of incubation through hatching (day 27). Each injection contained 30 μg HRP in solution of 0.3 μl. Brains were fixed in 5% phosphate buffered (0.16M) glutaraldehyde 5-8 hours after the injections and processed according to the technique of Streit and Reubi (BR 126:530, 1977). Frozen sections of 30 μm were sometimes counterstained with gallocyanin. The principal findings indicate a) all neurons, even those which later die, send their axons to the periphery; b) cell bodies of all nerve axons remain within the discrete area of the nucleus throughout development; and c) axons first contact the muscle on day 10 of incubation. (Supported by NIH Grant GM 23484.)

BOSHELL, J. L. and B. SINGH, Department of Oral Biology, School of Dentistry, Medical College of Georgia, Augusta, Georgia. *Histochemistry and morphology of unique eosinophilic bodies in the tongue of domestic pig (Sus scrofa).*

Refractile eosinophilic bodies and basophilic keratohyalin granules have been observed in filiform papillae of the tongue of hamster, rat, mouse, guinea pig, and dog (contains only eosinophilic bodies) by Singh et al. (Anat. Rec., 174:464). The objective of this study was to investigate the presence or absence of similar bodies in pig tongue. For this purpose, pieces of tissue from the dorsal surface of pig tongue were fixed in 80% methanol or 10% buffered formalin for light microscopic and histochemical observations. On the basis of staining with hematoxylin and/or eosin, it was found that only eosinophilic bodies are present in pig tongue. These bodies were seen in the cytoplasm of clear cells of the papillae. Histochemically, the eosinophilic bodies stained with Congo red and reacted faintly with Pauly's reagent. Feulgen reaction for DNA, periodic acid-Schiff and alcian blue (pH 0.5, 2.6) for carbohydrates were negative. Preliminary ultrastructural studies revealed the presence of granules which were oval, round or irregular in shape, and which exhibited varied sizes and densities. Some of these granules were closely associated with tonofilaments and occasionally assumed intranuclear locations. These studies indicate that the eosinophilic bodies in pig tongue seen with the light microscope correspond to the distinct intracellular granules observed at the ultrastructural level. They appear to be comprised mainly of protein(s), and their function or fate is at present unknown.

BOYLES, D. and J. CULBERSON. Department of Anatomy, WVU Medical Center, Morgantown, WV. *Clarke's column in the opossum.*

Although an extensive literature exists on Clarke's column, this cell group was not seen in one major study of opossum cord (J. Comp. Neurol., 46:407, 1928). In the present study, serial sections of opossum spinal cord segments were studied to determine the extent of Clarke's column and cell types within the nucleus. Material was stained with cresyl violet or by a Golgi technique. Clarke's column in the opossum begins at T2 and ends at L3. In upper thoracic segments, the cell column is dorso-lateral to the central canal; at more caudal levels it is situated more dorsally and laterally. At upper thoracic levels, the nucleus consists of scattered cells instead of a continuous column. More caudally, as the cell population increases, large neurons appear to cluster periodically with cell-poor regions between them. At all levels large cells are seen (40μ by 52μ); they are round to oval in cross sections but are elongated and have a pronounced rostro-caudal orientation when seen in longitudinal sections. They have large, deeply staining Nissl granules, and the nucleus is eccentrically placed. Smaller neurons of Clarke's column are also seen, especially at lower thoracic and upper lumbar levels. They are usually round or oval, occasionally triangular or spindle-shaped. Clarke's column in the opossum thus closely resembles this cell group in other mammals. (Supported in part by grants from the WVU Medical Corporation Research Fund.)

BROCK, THOMAS O. and JAMES E. TURNER. Department of Anatomy, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, N. C. 27103 *Effect of Repeated Nerve Injury on Regenerative Repair in the Optic Nerve of the Newt* (Triturus viridescens).

In the transected newt optic nerve, regenerating axons enter the distal stump by 6 days post lesion, before the glial scar is maximally developed (Turner and Singer, 1974). A series of experiments was designed to delay the outgrowth of these pioneer axons to ascertain whether further development of the glial scar would hinder regeneration. An initial nerve transection was made on all animals midpoint between the eyeball and optic foramen and then the animals were divided into various groups. Two groups were further treated in a manner to test the effect of delayed entrance of regenerating axons into the distal stump. In these groups nerves were crushed midway between the eyeball and the first lesion 4 and 11 days after the initial transection and were sacrificed 7 and 11 days respectively after crush. Control groups were sacrificed 7 and 11 days post initial transection. Preliminary comparisons of numbers of regenerating axons per nerve cross section by EM morphometric analysis indicates that delayed entrance of fibers into a fully developed glial scar did not hinder regeneration, but appeared to enhance the process. Our findings are strikingly similar to those of McQuarrie and Grafstein (1973), Agranof, Field and Gaze (1976), and Landreth and Agranof (1976), who reported that repeated lesions effectively enhance neurite outgrowth.

BUNCH, J. D. III and T. F. GALE, Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *Chromium-induced cleft palate in hamsters.*

Normal secondary palate formation involves the reorientation of the two vertical palatal shelves to the horizontal position followed by their fusion with one another, the nasal septum and primary palate. In hamsters this sequence has been divided into eight stages (Shah and Travill, 1976). The normal completion of this process involves many factors some of which can be disrupted by teratogenic agents to produce palatal clefts. It has been demonstrated that chromium trioxide produces cleft palate in hamsters when this compound is given IV at 8 a.m. on the 8th gestation day (Gale, in press 1977). Since the time of administration of teratogens has been demonstrated to influence the incidence and types of malformations produced, the aim of this study was to determine the effect of varying the time of injection of chromium on the frequency and morphological characteristics of cleft palate in hamsters. Anesthetized pregnant hamsters were treated intravenously with chromium trioxide at 8 a.m. on the 8th, 9th, 10th, 11th or 12th gestation day. Controls received only water (IV). On the 15th gestation day all fetuses were examined for external malformations, fixed in Bouin's solution and dissected to detect palatal clefts and internal malformations. Differences in the incidence of cleft palate, other malformations and resorbed embryos were observed between the experimental groups. (This work was supported by NIH Grant RR05365.)

BURT, A. M. and L. H. AULSEBROOK, Department of Anatomy, School of Medicine, Vanderbilt University, Nashville, Tennessee. *A neurohistologic study of the ataxic mouse forebrain.*

Ataxic is an autosomal recessive mutation carried by the C57BL/6J inbred strain of mouse. Homozygous mice (ax^J/ax^J) show progressive neurologic motor disability, first detectable at 2 weeks of age. Mice become progressively weak and unsteady, especially in the hindquarters. Following a period of hyperactivity (second week) the mice become increasingly paralyzed. This is further characterized by a rapid tremor and an overall weakness. Mutants fail to show exponential body growth, normal for the 5th and 6th weeks. Whereas ataxic mice are 81% of control weight at 19 days, they are 60% at 30 days and 36% at 41 days.

Serial sections of brains from mutant (ax^J/ax^J) and littermate control mice (+/+ or $+/ax^J$) were studied. Preparations were stained with Luxol Fast Blue and cresyl violet or impregnated according to a Golgi-Cox procedure.

The deficiencies in forebrain structures of older mutants were greater, compared to littermate controls, than those of younger mutants.

Subcortical tracts with major deficiencies include: anterior commissure (pars anterior and posterior), post-commissural fornix, and habenulointerpeduncular tracts. Reductions of lesser magnitude were noted in mamillothalamic tracts, olfactory stria and stria medullaris thalami. Intercortical connections via corpus callosum appear reduced with the cross-sectional area (midsaggital) approximately ⅔ that of controls. This reduction is paralleled by consistent, but less apparent, reductions in thickness of neocortex, with deficiencies in occipital and parietal cortices most pronounced. Midbrain and hindbrain deficiencies are presented here by Aulsebrook and Burt. (Partially supported by funds from Biomedical Research Support Grant RR-05424.)

CANE, L. S., B. W. HARRIS, R. D. GRAY, and F. K. HILTON, Departments of Anatomy and Biochemistry, University of Louisville School of Medicine, Louisville, Kentucky 40232. *Hematological changes following establishment of social rank in mice.*

When two male CF_1 mice are placed together they fight to establish a dominant-subordinate relationship. Subordinate animals exhibit an extramedullary erythropoietic splenomegaly, decreased hematocrit and a reticulocytosis (Brassard, Revue can. Biol. 24: 38, 1965). It has been hypothesized that these effects observed in subordinates may in part result from increased autonomic sympathetic stimulation. (Wehle, Harris, Hilton, Anat. Rec. 184: 559, 1976). Such stimulation could produce ischemic and anemic changes in certain body organs, particularly the kidneys, resulting in an increased output of renal erythropoietic factor. Since the amount of hemoglobin present in the kidney at any one time should reflect the amount of oxygen present, levels of this compound were determined. Levels were found to be greater in dominant animals after 2, 7 and 14 days post pairing. This supports the hypothesis that the kidneys of subordinates are hypoxic.

Little information exists regarding the physiological parameters of blood following establishment of social rank. Hemoglobin, blood pH and gases were examined in dominant-subordinate mice. Subordinate animals showed significant decreases in hemoglobin, pH and increases in PCO_2 and negative base excess. The decreased hemoglobin reflects bleeding from wounds inflicted on the subordinates. We suggest early contributions from a hypersympathetic syndrome stimulating erythropoiesis which is later exacerbated by bleeding resulting from fighting to establish social rank.

CARMICHAEL, S. W. and D. J. SMITH, Departments of Anatomy and Anesthesiology and Pharmacology, School of Medicine, West Virginia University, Morgantown, West Virginia, *Direct continuities between mitochondria and catecholamine-storage vesicles in adrenal medulla seen by HVEM.*

Our interests have been in following the events involved in the secretion of catecholamines from the adrenal medulla. One such event is the accumulation of ATP into catecholamine-storage vesicles. We are proposing that intracellular ATP transport is at least in part influenced by morphological channels that have been observed between mitochondria and storage vesicles.

Hypoglycemia-shocked rats were perfused with 3% glutaraldehyde in buffer at 0, 4, and 24 hours after insulin injection. Adrenals were removed and prepared for high-voltage electron microscopy (HVEM) as described previously (Carmichael and Smith, Experientia, 30:1459, 1974). Analysis of the micrographs in three-dimensions revealed an extension of the outer mitochondrial membrane that was continuous with the membrane of the storage vesicle. Thus the space between the inner and outer mitochondrial membrane was in direct communication with the interior of the vesicle. These continuities involved about 25% of the mitochondria from tissue of control rats (no insulin) as compared to about 40% of the mitochondria from rats perfused 4 hours after insulin treatment and 50% of the mitochondria from rats 24 hours post-insulin.

COOPER, N. G. F. and B. J. McLAUGHLIN. Dept. of Anatomy, University of Tennessee Center for the Health Sciences, Memphis, TN. *Fine Structural Study of Membrane Recycling in Photoreceptor Terminals of the Chick Retina.*

Electron microscopy of *in situ* eyecup preparations from 1 wk old hatched chicks was used to determine the sequence of events that occurs when horseradish peroxidase (HRP) is taken up by photoreceptor terminals in the chick retina. HRP in Ringer was added to eyecup preparations which were then kept under diffuse light or dark conditions for 1-30 min. Within 3 min of adding HRP to the dark adapting retina, label is seen in both coated vesicles and synaptic vesicles of the cone terminals. At 6 min an increase in labeling of coated vesicles in cone terminals has occurred. In addition, label is seen in some smooth membrane sacs and some synaptic ribbons have at least one labeled synaptic vesicle associated with them. There is little increase in HRP uptake by the cone terminals between 6 and 30 min, however, there are more ribbons having more than one labeled synaptic vesicle. During dark adaption there is little uptake of HRP by the rod terminals, but between 15 and 30 min the occassional coated vesicle and smooth membrane sac becomes labeled. At 15 min with a diffuse light stimulus, product is seen in synaptic vesicles, but not in coated vesicles of the cone terminals. At 30 min with a diffuse light stimulus product is seen in synaptic vesicles and a few coated vesicles and smooth membrane sacs. The labeling of synaptic vesicles after 15 min in the light suggests a mechanism other than coated vesicle membrane retrieval may be responsible for HRP uptake by the cone terminals during this stimulus. This observation, together with the later involvement of coated vesicles after 30 min in the light and the simultaneous presence of HRP in both coated and synaptic vesicles of rods and cones throughout dark adaptation suggests at least two uptake mechanisms in photoreceptor terminals. (Supported by Fight for Sight, Inc.; USPHS Grant GM-00202.)

DAVIES, J., G. R. DAVENPORT, and MARCIA H. RUSSELL, Department of Anatomy, School of Medicine, Nashville, Tennessee. *Prenatal effects of DES in the guinea pig.*

In order to develop an animal model for the clinical effects of maternally administered diethylstilbestrol (DES) on the reproductive tract of male and female offspring, the guinea pig was used as an experimental animal. The normal development and histogenesis of the reproductive tract in both sexes was first studied and critical periods determined. DES in doses from 2.5 to 5.0 micrograms per day subcutaneously in sesame oil was injected daily into pregnant guinea pigs over the critical period (28-40 days) of from about the 28th day to term. The following is a tentative list of observed effects: in the male — stimulation of the uterus masculinus, small phallus, stimulation of the urogenital sinus epithelium of the lower seminal vesicles, lower vasa deferentia, and the posterior compartment of the prostatic urethra; in the female — stimulation of the epithelium of the vagina, cervix and uterus, elongated vagina and high cervix, shifting of junctional zone between ecto- and endocervix distally, hypospadias, massive cornification of vestibule and vulva and of accessory glands, short and hypertrophied uterus, retarded follicular development and inhibition of prophase maturation in oocytes, residual mesonephric and Wolffian structures resembling miniature epididymis, etc. These effects will be discussed. (Supported by a grant from Eli Lilly and Company.)

DOUGLAS, BEN H., and ALLEN D. ASHBURN, Department of Anatomy, Univ. Miss. Med. Ctr., Jackson, Miss. *Effects of vitamin D_2 followed by sixteen weeks of cholesterol feeding on the rat aorta.*

The present study was designed to examine the effects of vitamin D_2 (calciferol) and cholesterol on the rat. Eleven rats received, orally, an olive oil solution (1.5 ml/kg body weight) containing 320,000 IU vitamin D_2/ml and 40 mg cholesterol/ml for 4 days and then the solution containing only the cholesterol for up to 16 weeks. The regimen had no effect on the blood pressure (125 ± 4 mmHg initially to 131 ± 4 mmHg at the end of the study) and the animals gained weight during the 16-week period (171 ± 10 g initially to 274 ± 11 g at the end of the study). After 10 days there was hyalinization and necrosis of the medial smooth muscle of the aorta. Elastic membranes became widely separated and fragmented. Prior to fragmentation elastic membranes were less PAS-positive and stained heavily with hematoxylin. As a sequel these areas became calcified and often extended into the intima. After 16 weeks there were indications of extensive healing of the lesions in the aorta. There appeared to be less aortic calcification and no new necrotic areas were observed. The above regimen disrupts the structure of the aorta but apparently all of the damage is not irreversible.

DUNLAP, M. K., and D. J. DONALDSON, Department of Anatomy, Univ. of Tennessee Center for the Health Sciences, Memphis, TN. 38163. *Colchicine fails to block newt epidermal cell migration or reverse the migration-inhibitory effects of concanavalin A.*

Microtubules appear necessary for locomotion in some cell types. There is also evidence for an interaction between microtubules and concanavalin A (con A) receptors on the cell surface. With this information in mind, the role of microtubules in epithelial cell migration during wound closure in the adult newt was studied as was the requirement of intact microtubules for con A-induced suppression of this migration. Prior to wounding, animals were injected with either colchicine or Holtfreter's solution. Skin flaps were removed from the hindlimb between the ankle and the knee. After wounding, animals were maintained in either Holtfreter's solution or con A (20 μg/ml). The extent of wound closure was recorded at 4, 8, and 24 hours, using pigment cells as gross indicators of the rate of cell migration. Approximately 24 hours after the initial wounding, similar wounds were made contralaterally and the new wounds were also observed for 24 hours. Animals which were injected with metaphase-accumulating doses of colchicine and maintained in Holtfreter's solution showed no inhibition of migration, indicating that intact microtubules are not necessary for this activity. Con A-treated animals had a greatly reduced migration rate even in the presence of colchicine. Therefore microtubules also appear to be unnecessary for this effect.

FLORENCE, S. L. and V. A. CASAGRANDE, Dept. Anat., Vanderbilt Univ. Nashville, Tenn. 37232. *Effects of Visual Deprivation of Geniculo-striate Pathways of Tree Shrew.*

In order to identify changes in the distribution of geniculate cells projecting to cortex, horseradish peroxidase was injected into area 17 of normal, monocularly, and binocularly sutured tree shrews. In normal tree shrews, injections resulted in reaction product in 77.4 to 91.1 percent of geniculate cells in well labelled zones of all six layers, indicating that as in monkey (Norden, 1974) the geniculate nucleus of tree shrews has few interneurons. In all cases, the mean cell area of labelled cells was larger than that of unlabelled cells.

Following bilateral injections in either monocularly or binocularly deprived animals, the percentage of labelled cells in deprived and non-deprived layers was not significantly different from normal. However, in monocularly deprived animals, densely labelled cells within non-deprived geniculate laminae were consistently found to extend over a wider laminar area than labelled cells in adjacent deprived laminae, suggesting that the terminal arbors of non-deprived cells are more extensive than those of deprived cells. Consistent with this result and previous work (Casagrande *et al.*, 1976), we also found that mean cell sizes of labelled deprived cells were significantly smaller than those of non-deprived cells. (Supported by EYO-1778.)

FORT, B. and T. McDONALD, Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *Changes in the hypothalamic arcuate nucleus following goldthioglucose treatment: a study with electron microscopy and intravascular tracers.*

Treatment of mice with GTG induces selective damage to the ventral medial hypothalamic nuclei within hours. The nature of the injury and cause for its specificity are still controversial. In the present study we have used electron microscopy and intravascularly injected tracers to study the sequential changes in the hypothalamic arcuate nucleus to obtain further information about the injury.

Two hr after treatment some capillaries contained clumps of platelets and swelling occurred in postsynaptic nerve processes. By 3 hr swelling of astrocytes was prevalent, capillaries were thrombosed, and the extracellular space was enlarged. By 5 hr the tissue showed severe degenerative changes of all cell types.

Horseradish peroxidase, which tends to enter the extracellular space of the tissue under normal conditions, began to penetrate into the cytoplasm of nerve cells at 2 hr after treatment. Ferritin did not enter the tissue until 3 hr when the extracellular space was enlarged and edema and thrombosis were prevalent.

FRAKER, LESA D. and JAMES A. McKANNA, Department of Anatomy, Vanderbilt Medical School, Nashville, TN. *Scanning Electron Microscopy (SEM) of Zonular Dysplasia in Myopia.*

Interest in the accommodative apparatus of myopic eyes led us to develop a technique for SEM of delicate specimens. Normal and myopic eyes were fixed and embedded in epon as for usual TEM. Meridional wedges sawed from anterior hemispheres were flat mounted on stubs for sectioning on a Porter-Blum MT-2 ultramicrotome. 25 μm thick serial sections cut dry on glass knives were flattened on gelatinized coverslips by floating on a drop of water:xylene and slowly drying. In order to expose the ocular structures for SEM, the epon was dissolved by 2-8 hours incubation in 2% NaOH in absolute Ethanol. Following critical point drying and standard SEM preparation, the ciliary zonule of normal eyes appears as coarse fibers and numerous fibrils connecting the lens to the ciliary body, while the myopic zonule is composed of fine fibrils and individual microfibrils. The zonular dysplasia revealed by SEM supports our hypothesis that chronic accommodation contributes to the development of myopia.

HAINES, D. E. and R. H. WHITWORTH, Department of Anatomy, West Virginia University, School of Medicine, Morgantown, WV. *Corticonuclear fibers of the paraflocculus in the tree shrew (Tupaia glis).*

Parafloccular corticonuclear fibers were studied using a modification of the Fink-Heimer method. Although division of the paraflocculus into dorsal (Dpf) and ventral (Vpf) portions is not obvious, several criteria suggest that the dorsorostral large folia represent the Dpf and the caudoventral small folia the Vpf.

Debris is seen in caudal portions of the lateral cerebellar nucleus (NL) and lateral and caudal areas of the posterior interposed nucleus (NIP) following lesions of presumed Dpf. From the Dpf there appear to be more fibers entering the NL than the NIP. Numerous degenerated axons enter the lateral and caudal NIP while relatively few are seen in the caudal NL following destruction of the presumed Vpf. This seems to indicate a topographical representation of the parafloccular cortical efferents in the cerebellar nuclei.

Parafloccular projections into the cerebellar nuclei are ipsilateral, appear to be topographically organized and not restricted to a single nucleus. There is little evidence that significant numbers of fibers exit the cerebellum to enter the vestibular complex or other brainstem relay nuclei. (Supported by USPHS Grant NS11327 from NINCDS.)

HARRINGTON, DANIEL B., Department of Anatomy, Fairleigh Dickinson University School of Dentistry, and O'HARA, GERALD P., Division of Pharmacology, Marquette University College of Dentistry. *Effects of Bone Fracture on Limb Regeneration Blastema Formation in Trituris Viridescens.*

Evidence has been accumulated that small amounts of electric current are among the list of stimulators which can elicit formation of blastema for limb regeneration in vertebrates. Recently bio-electric potentials have been used to induce limb regeneration in adult frogs and in other normally non-regenerating organisms. Bio-electric currents can travel from one point to another in an organism and one mode of electric current transport is thought to be bone, which contains inherent semi-conductive electrical properties. This study seeks to identify any alteration of blastema formulation in the regenerating newt, *Trituris Viridescens,* when the bone portion of a presumed bio-electric circuit is damaged in a limb attempting blastema formation and subsequent regeneration. Fifty-four adult newts were randomly placed in two groups of twenty-seven animals. Group A received one forelimb amputation at the mid radius/ulna level; Group B received both mid-humerus fracture and ipsilateral mid radius/ulna amputation. The animals were then allowed to regenerate for intervals of up to 31 days post-amputation. Nine intervals were used and three animals per group per interval were studied. Five hours prior to sacrifice, 5.0 u Ci tritiated thymidine (6.0 Ci/m mole) were injected into each animal, to study the kinetics of DNA synthetic activity at each interval. The blastema plus a small piece of stump was removed from each animal, fixed for 72 hours in 10 percent formalin, decalcified, sectioned, mounted, dipped in nuclear track emulsion (NTB-2) for autoradiography, and exposed for 23 days. Slides were then developed in D-19 developer, fixed, dried, stained with light Hemotoxylin and Eosin, and mounted for histological evaluation. Results show regeneration process in Group B (fracture and amputation) to be approximately 3 to 4 days behind the blastema forming in Group A (amputation only). Comparison of cell migration and DNA synthetic activity in the 2 groups will be discussed. (Supported by General Research Support Funds of F.D.U.S.D. and M.U.C.O.D.)

HAWKINS, W. E., T. G. SARPHIE, L. G. TATE, and C. A. FOSTER, Departments of Anatomy and Biology, University of South Alabama, Mobile, Alabama 36688, and the Gulf Coast Research Laboratory, Ocean Springs, Mississippi 35640. *The Fine Structure of an Unusual Cell Type in the Teleost Kidney.*

The renal ultrastructure of two species of estuarine fish, the croaker *Micropogon undulatus* and the spot *Leiostomus xanthurus*, was examined. An unusual cell type consistently occurs in the epithelium of the proximal tubules of both species. In semi-thin sections, these cells are oval with a basally located nucleus, a granular cytoplasm, and appear surrounded by a thick capsule. Similar cells have been reported in viscera of other fish and there is a controversy over whether the cells are sporozoan parasites or unicellular glands. Electron microscopy shows that the granules in the apical cytoplasm have an electron dense core that often appears elongated. In each cell, individual granules are usually a uniform size and granules are sometimes present in the tubular lumen. The capsule observed with the light microscope is actually a filamentous layer situated beneath the plasmalemma. Cross sections show that the filaments are oriented circularly around the transverse diameter of the cell. Between the filamentous layer and the plasmalemma are dense plaques that resemble hemidesmosomes. True desmosomes join the oval cells and proximal tubular cells. The presence of desmosomes between the proximal tubular cells and the oval cells and the fact that the latter do not seem to correspond to any developmental stage of a sporozoan suggest that the cell in question is not a parasite.

HARGROVE, K. M. (Sponsored by Dr. D. L. Wilbur), Department of Anatomy, Medical University of South Carolina, Charleston, South Carolina. *Scanning Electron Microscopy of Anterior Pituitary: Identification of Cell Types.*

The identifying characteristics of the secreting cell types of the rat anterior pituitary (ap) as seen in the scanning electron microscope (SEM) were determined by comparing images of the same cells from SEM and transmission electron microscopy (TEM). This was accomplished by careful mapping of glutaraldehyde fixed, cryofractured, critical point dried surfaces of anterior pituitary tissue in the SEM. These tissues were subsequently embedded in Spurr's low viscosity embedding medium, sections were cut parallel to the scanned surface and observed in the TEM. By locating the same cell, the internal organelles, granule size, granule distribution, etc., indicative of a cell type in TEM could be compared with the same structures in SEM. This information was then used to tentatively characterize the cell surfaces from razor-cut and teased apart tissue. Single cells fixed in suspension and attached to poly-l-lysine coated cover slips were also identified.

HAZEN, D., and J. A. V. SIMSON, Department of Anatomy, Medical University of South Carolina, Charleston, South Carolina. *Immunocytochemical Localization of Nerve Growth Factor: Fixation Dependence.*

Immunocytochemical staining for nerve growth factor (NGF), using an enzyme bridge technique and a highly specific primary antiserum, reveals intense staining of stored secretory granules in male mouse submandibular gland granular tubule cells. Very little cytoplasmic background was apparent. These results were obtained with tissue fixed for one hour with calcium acetate buffered or phosphate buffered 4% formaldehyde. If fixation time was prolonged to 24 hours, immunostaining was reduced appreciably, and cytoplasmic background staining became notable. Following fixation with Bouin's fixative (1 hour) or chloroform-methanol (24 hours), fixatives commonly used for immunocytochemistry, the granule straining was lost, but cytoplasmic staining was moderate to intense. It is concluded that, for the salivary gland localization of NGF, optimum fixation is achieved with buffered formalin for one hour. For membrane-bound or membrane-enclosed antigens, such as submandibular gland NGF, membranolytic fixatives (*e.g.*, Bouin's solution or lipid solvents) may expose antigenic sites, but substantial redistribution of the antigen probably also occurs. (Supported in part by NIH BRS Grant #RR05420 to the Medical University of South Carolina.)

HOLT, R. K., S. D. STONEY and G. S. SOHAL, Department of Anatomy and of Physiology, Medical College of Georgia, Augusta, Georgia. *Onset of transmission in the trochlear nerve and development of the neuromuscular relationships.*

Development of the trochlear nerve in white Peking ducks was studied to correlate electrophysiological findings with the morphological development of the neuromuscular contacts. The nerve is functional from day 11 of incubation onward. Conduction velocity (at 21-23°C) on day 12 was 0.4m/sec, and increased to 5.7m/sec on day 27 (hatching). Stimulation of the nerve with single or multiple current pulses evoked contraction of the superior oblique muscle from day 11 onward. Morphological observations indicate that the trochlear nerve first enters the muscle around day 10. On day 11 the nerve branches into small fascicles with a few fibers ending directly on myoblasts and myotubes. The first appearance of distinct myofibers is on day 17. The motor endplates first become identifiable on day 18. The results of the present study indicate that: 1) trochlear nerve becomes functional as soon as it contacts the muscle; 2) stimulation of the nerve can elicit muscle contraction long before the morphological appearance of the motor endplates; 3) loss of the trochlear neurons and their axons observed during normal development could be related to their failure to establish functional connections with the periphery. (Supported by NIH Grant GM23484).

JACKSON, WAYNE and THOMAS ROSENQUIST. Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *Correlation of Age with Acid Phosphatase Levels in Rat Prostatic Tissue.*

Prostatic tissue from rats aged eight weeks, seventeen weeks, and retired breeders was frozen and cut into twenty micron sections. The sections were then allowed to incubate at 37°C for two hours in a lead-containing substrate solution of codium β-glycerophosphate. Next the sections were dipped in a solution of ammonium sulfide which caused the lead to precipitate. The tissue was scooped off and weighed in a Cahn balance. The tissue was then dissolved in nitric acid. Finally, the samples were analyzed on an atomic absorption spectrophotometer. The data revealed that an increase in age causes an increase in acid phosphatase activity. This is evidenced by a steady increase in acid phosphatase activity in the three successive age groups. Even though reproductive activity may diminish with advancing age, acid phosphatase activity continues to increase. (This study was supported by NIH General Research Support Grant #10-12-04-2000-02.)

KEHL, THOMAS and THOMAS ROSENQUIST. Anatomy Department, Medical College of Georgia, Augusta, Georgia. *The PAS Reaction in Rat and Mouse Kidneys: Changes with Aging.*

The purpose of this study was to quantify any age-related changes in PAS reactivity in the renal cortex of undiseased rat and mouse kidneys, and to apply statistical analysis (student's T-test) to the data obtained to determine (1) intraspecific PAS reactivity changes with age and (2) interspecific PAS reactivity relationships within four relative age groups. The kidneys were removed, longitudinally divided at the hilus, fixed with a solution of ethanol: formalin: acetic acid (ADA), and embedded in paraffin. Sections 10μ in thickness were mounted and stained utilizing routine PAS procedures. Both rat and mouse exhibited a peak of PAS reactivity in a middle age group, with significantly lower reactivity in the younger and older age groups. The rat and mouse were significantly different when areas $8 \times 10^4\mu^2$ of cortex were compared. In order to compare interspecific tubular PAS reactive relationships, the number of tubules per area within each age group of each species was determined. No significant intraspecific changes in tubules per area occurred with age in either species, but the mouse had significantly more tubules per area than rat. When this factor was used to adjust the stain intensity data, the difference between the rat and mouse was enhanced. (This study was supported by NIH General Research Support Grant #10-12-04-2000-02.)

KUMAR, K. V. Department of Anatomical Sciences, Meharry Medical College, Nashville, Tennessee 37208. *Cyclic Nucleotides, Calcium and Mitosis.*

This work deals with our studies related with mitosis in Hela cells while elevating intracellular levels of CAMP and CGMP (by administering 3-isobutyl-1-methyl-xanthine or "MIX", a potent inhibitor of phosphodiesterase) in presence of various chemicals known to affect mitosis, temperature shifts and in mitotic cells blocked by N_2O pressure.

It was interesting to find that while even $10'$ addition of MIX inhibits cell-entry into mitosis, MIX reverses the inhibition (on metaphase cells) imposed by D_2O heat (39°-40°) and very diluted colcemid. The inhibitions imposed by 2-4 DNP, N_2O pressure, antimycin, warfarin, rotenone and cold shocks were irreversible. Control cells at 37° showed no stimulation. The stimulating effect was also demonstrated by calcium, the ionophore A23187 and by synergism of Ca^{++} and MIX as well as 8 BrCAMP and MIX. The effect was due to 8 Br5′AMP or to Mg^{++}. Addition of Ca^{++} did not increase intracellular CAMP-level. Addition of MIX resulted in the increase of $45_{Ca}++$ uptake but its effect was independent of such uptake as it could be demonstrated in presence of EGTA implying the release of CA^{++} from the intracellular membranes. 8 BrCGMP aggravated the metaphase inhibitions by heat.

Ca^{++} may be implicated in terminating metaphase and initiating events that lead to anaphase. It may be involved in disassembly of mitotic spindle which would trigger anaphase explaining such varied effects as reversal of inhibitions due to diluted colcemid, heat and D_2O. (Supported by grants AM-07462, HE-08332, and CA-13638 from NIH and IN-25P-1 from the American Cancer Society to Dr. D. L. Friedman, Vanderbilt University.)

LOMBARDINI, J. B. and FRIGYESI, T. L. Departments of Physiology and Pharmacology, Texas Tech University School of Medicine, Lubbock, Texas 79409. *Corpus restiforme; its functional role in an experimental epilepsy.*

A penicillin focus in the motor cortex (MC) initiates activities in several supraspinal neural circuits. In previous studies from this laboratory it was shown that interictal spikes in the MC, in this form of epilepsy, are functions of activities in the ventrolateral (VL) and some medical thalamic (CM-Pf complex) nuclei. In the present study, in locally anesthetized, encèphalé islé cats, it has been demonstrated that interictal spikes in the MC are preceded by interictal activities in VL and succeeded by prominent discharges of Purkinje cells in the contralateral cerebellar hemisphere. Attempts were made to determine the trajectory and the functional correlates of these cerebro-cerebellar activities. Status epilepticus were induced in the experimental animals by either high-frequency (400 Hz) stimulation of the brachium conjunctivum or topical administration of diphenylhydantoin onto the posterior lobe of the cerebellum. Under these conditions, fully developed ictal episodes were recorded from the MC, VL and the Purkinje layer. Midline sectioning of the medulla, severing the climbing fibers, failed to alter the ictal episodes at these sites. Bilateral sectioning of the corpus restiforme abruptly and permanently terminated the ictal episodes in the thalamocortical circuit. These and other data show that the integrity of a cerebro-cerebellar feedback loop, via the restiform body, is necessary to sustain the status epilepticus in the thalamocortial circuit in the cat with an epileptic focus in the MC. (Supported, in part, by grant #12-A550-400000 TTUSM.)

LOUIS, T. M., I. E. LAWRENCE, JR., R. F. BECKER and H. W. BURDEN, Department of Anatomy, School of Medicine, East Carolina University, Greenville, North Carolina. *Prostaglandins, progesterone and ovarian HSD in pelvic neurectomized pre-parturient rats.*

Several authors (Carlson, R. R., V. J. De Feo, 1965, Endocrinology, 77: 1014 and Spies, H. G., Y. M. Forbes, and M. T. Clegg, 1971, *Proc. Soc. Exp. Biol. Med.*, 138:470) have shown that pelvic neurectomy (PN) blocked parturition. In preliminary studies we also found that PN blocked parturition. The cause of this blocked parturition remains unexplained. To determine if PN had a possible action on progesterone and prostaglandin, two endocrine mediators of labor, we neurectomized or sham-operated (S) rats on days 8-10 of pregnancy. On days 20, 21 and 22, (N=12 in each day, total N=72) rats were anesthetized lightly and utero-ovarian vein (UOV) blood was collected, centrifuged and plasma frozen and stored at −60°C until radioimmunoassay for progesterone (P) and prostaglandin $F_{2\alpha}$ (PGF) or prostaglandin E_2 (PGE). One ovary from each rat was immersed in a BEEM capsule containing OCT compound, frozen, and stored at −20°C for hydroxysteriod dehydrogenase (HSD) histochemistry. Analysis of variance indicated a significant ($P<.01$) decline in plasma P in the S animals but no decline in the PN animals. Student's Newman Keuls (SNK) analysis for multiple critical values indicated that day 20, and 21 were not different in the S animals but declined ($P<.01$) on day 22. Similarly, there was a significant difference ($P<.05$) between day 20, 21, and 22 plasma PGF in the S but not in the PN animals. SNK analysis indicated an increase in PGF ($P<.05$) on day 22 in the S animals. There was no significant change in UOV PGE in either the S or PN treatment groups. The density and intensity of the HSD diformazan reaction product, using dehydroepiandrosterone as substrate, was less in ovaries of PN rats on the 3 days studied. There was no difference in reaction product in the two groups with pregnenolone as substrate. The reduced HSD activity with DHA substrate is interpreted an a decreased capacity of ovaries of PN animals to synthetize estrogen.

MANION, W. L., R. G. FREDERICKSON, and C. A. PINKSTAFF, Department of Anatomy, School of Medicine, West Virginia University, Morgantown, West Virginia. *Histochemistry of Mucous Secreting Elements of Rat Respiratory Tissue Embedded in Glycol Methacrylate.*

The conducting portion of the respiratory system is composed of glandular mucosa, cartilage and smooth muscle. Sectioning of paraffin-embedded organs composed of such variably dense tissues often results in their artificial separation. Paraffin embedding introduces an additional artifact of shrinkage.

Paraffin embedding has been used for quantitative morphological analysis of goblet cell populations and mucous gland volumes and for quantitative histochemical analysis of mucous cell secretions. Specific technical limitations of paraffin procedures in quantitative studies of respiratory passageways include the artifacts of crenation of the bronchial mucosa and artificial separation between perichondrium and cartilage. In light of these problems, methods were investigated to apply specific histochemical procedures to respiratory tissues embedded in glycol methacrylate. Glycol methacrylate preparations display minimal shrinkage and retain good overall morphological integrity of tissues. Tissues were preserved in either Karnovsky's fixer or 10% formalin containing 1% cetylpyridinium chloride.

This report discusses the suitability of glycol methacrylate embedding for quantitative analysis of respiratory tissue and describes the efficacy of carbohydrate histochemical techniques applied to this water-permeable embedding medium.

MARTIN, G. F., J. CULBERSON, R. DOM, G. GOODE and A. HUMBERTSON, Department of Anatomy, The Ohio State University, Columbus, Ohio. *Observations on the development of brainstem-spinal systems in the North American opossum.*

The opossum's embryology makes it a good model for studies of developing motor systems and it is of particular interest that the hindlimbs of the newborn are very immature and remain immobile for a week or more after entrance into the pouch.

By using the Fink-Schneider method on pouch young opossums with brainstem lesions (see C. M. Leonard, Brain Res., 53:412-416) we have demonstrated "immature" brainstem neurites in the marginal layer of the lumbar cord prior to the development of hindlimb motility. Electron micrographs reveal that such fibers are very small and unmyelinated at that age. By the time random hindlimb movements are observed brainstem fibers can be demonstrated in the mantle zone and fluorescent varicosities are present in both the dorsolateral marginal zone and the expanding neuropil of the dorsolateral mantle layer. At the latter age the horseradish peroxidase method shows that brainstem axons in the lumbar cord take origin from most of the nuclei which give rise to such fibers in the adult animal, including the markedly fluorescent locus coeruleus. (Supported by U.S.P.H.S. Grant NS-07410.)

MCDONALD, A. J., Department of Anatomy, West Virginia Univ. Medical Center, Morgantown, WV. *The projections of the amygdala in the opossum: an autoradiographic study.*

Previous studies of the amygdala have shown that the superficial nuclei receive fibers from the olfactory bulb and project to the medial hypothalamus while the deep nuclei have connections with the neocortex and thalamus. Since the opossum has well-developed olfactory and limbic systems and a relatively under-developed neocortex it is of interest to determine the pattern and relative contributions of the amygdaloid projection to these different areas in this animal. Large injections of ^{3}H-leucine into the caudal basal and cortical nuclei label both the stria terminalis (ST) and the ventral amygdalofugal pathway (VP). The ST projection field includes the bed nucleus of the ST (BNST), accumbens nucleus, and medial preoptic and hypothalamic areas including a laminar terminal field encapsulating the ventromedial nucleus. Injections limited to the basal nucleus or involving the rostral amygdala did not show this laminar ventromedial nucleus projection. The VP projects rostrally and terminates in the deeper parts of the amygdala, especially in the central and basal parvocellular nuclei, and also in the substantia innominata, anterior amygdaloid area, ventral BNST, and the nucleus of the lateral olfactory tract. Large injections into the rostral amygdala label both the ST and VP. The ST includes projections to the BNST bilaterally, and to the contralateral basal magnocellular nucleus via the anterior commissure and contralateral ST. The projection of the VP is similar but more prominent than that seen with caudal injections. In addition, there are projections to discrete neocortical areas. (Supported in part by a grant from the W.V.U. Medical Research Corporation.)

McGETTIGAN, M. C. and J. L. HAAR, Department of Anatomy, Virginia Commonwealth University, Richmond, Virginia 23298. *The mitogenic stimulation of intact, cultured 10 day mouse yolk sac.*

Since mouse visceral yolk sacs, after trypsinizing and passage through a Coulter Electronics TPS-1 cell analyser sorter have been reported previously as the source of large precursor blood cells, the study of the response of intact yolk sacs to stimulation by mitogens, and of the binding sites of mitogens to the yolk sac cells seems to be warranted.

Mouse visceral yolk sacs were dissected from embryos at 10 days gestation and maintained for three or four days using minimum essential medium supplemented with human serum, penicillin-streptomycin, and L-glutamine in a humid atmosphere of 95% air and 5% CO_2 at 37°C. These cultured masses were incubated with 100μg/ml concanavalin A (Con-A) for one hour and with lmg/ml horseradish peroxidase (HRP) for 45 min. and then exposed to Mesulam's protocol using sodium nitroprusside and benzidine dihydrochloride, plastic embedded, sectioned, and studied with light microscopy for elucidation of a blue reaction product. Preliminary results indicate a sequestering of this blue reaction product by the cells of the epithelium of the cultured yolk sacs. Proof of the binding of Con-A to HRP will be presented by the use of autoradiography with tritiated Con-A.

The visualization of mouse yolk sac binding sites to Con-A is presently being carried out using 20-100μg/ml fluorescein labelled Con-A. Autoradiography of tritiated thymidine uptake after stimulation by 2μg/ml Con-A and 2.5μg/ml phytohemagglutinin is also currently in progress. (Supported in part by NIH grants 5507RR05430-16 and AI 13486-01.)

McKEEVER, MARY O. and ISABEL LOCKARD, Department of Anatomy, Medical University of South Carolina, Charleston, South Carolina. *Capillary Architecture of Extraocular Eye Muscle Nuclei.*

Little quantitative information is available for the capillary architecture of nuclei which supply extraocular eye muscles (EOM). In this study intercapillary distances (ICD) within these nuclei were measured in capillary beds demonstrated by the intravascular precipitation of lead chromate. Cells were stained with thionin. Average ICDs for oculomotor and trochlear nuclei in cat and rabbit and abducens nucleus in rabbit (21-23 μm) were similar to one another but considerably less than for the motor nuclei of V, VII, and XII in cat (31-35 μm) and rabbit (27-35 μm). The measurements for these EOM nuclei were similar to or less than those in the dorsal and ventral cochlear nuclei in rabbit (23 μm) and cat (24-25 μm). In the cat abducens nucleus, the average ICD (32 μm) was similar to other motor nuclei measured and greater than cochlear nuclei.

In contrast to the reports of Craigie ('20) and others our data indicate that some motor nuclei are more vascular than sensory nuclei. With the exception of the abducens nucleus in cat, the motor nuclei which supply the extraocular eye muscles in both animals contain capillary networks as dense as those in the cochlear nuclei and more dense than in any other motor nucleus measured.

McLAUGHLIN, B. J., J. G. WOOD and J. W. GURD. Dept. of Anatomy, University of Tennessee Center for the Health Sciences, Memphis, TN; Dept. of Biochemistry, University of Toronto, Ontario. *Ultrastructural Localization of Lectin Binding Sites at Developing Photoreceptor Synapses before and after Enzyme Digestion.*

Carbohydrate containing macromolecules were visualized in the outer plexiform layer (OPL) of embryonic and hatchling chick retina by horseradish peroxidase-conjugated wheat germ (WGA) and castor bean (CB) lectins, prepared according to the two-step glutaraldehyde method of Avrameas (Immunochem, 8:1175, 1971). Both WGA and CB binding sites were visualized along developing photoreceptor synaptic membranes in the embryonic retina. The inside of coated vesicles was labeled also as were the plasmalemmas of developing neurites and glia. After photoreceptor synapse formation (hatchling retina), CB binding sites were restricted to non-synaptic membranes as previously reported for Con A (Brain Res., 119:57, 1977), but WGA binding sites were visualized on the pre- and postsynaptic membranes of receptor ribbon synapses, in addition to non-synaptic membranes. The effects of enzymatic digestion on CB and WGA binding were studied after prior treatment with either trypsin or neuraminidase. CB staining of developing synaptic and non-synaptic membranes in the embryo remained the same after pretreatment with either enzyme, but in the hatchling CB staining of non-synaptic membranes was enhanced by both enzymes. WGA staining of developing synaptic and non-synaptic membranes in the embryo remained the same after trypsin but was greatly reduced after neuraminidase pretreatment. WGA staining in the hatchling was not altered after trypsin treatment, but after neuraminidase pretreatment photoreceptor synaptic membranes were no longer labeled and non-synaptic membrane staining was diminished. These differences in lectin labeling before and after enzyme pretreatment may reflect developmental changes occurring in the oligosaccharide chains on developing photoreceptor synaptic membranes and non-synaptic membrane surfaces during synapse formation and maturation. (Supported by NS-12590; Fight for Sight, Inc.; Alfred P. Sloan Foundation.)

MELOAN, S. N. and H. PUCHTLER, Department of Pathology, Medical College of Georgia, Augusta, Georgia. *Effects of acids and bases on color and fluorescence of dyes: resonance versus quinonoid theory.*

The quinonoid theory of dye structure was introduced by Nietzki in 1888 and is still widely used in histology. However, this concept cannot explain various phenomena, e.g. color changes upon addition of protons, effects of solvents on fluorescence. Previous investigations of triaminotrophenylmethane dyes showed striking differences between these dyes and the corresponding quinonoid forms. These differences were readily explainable by the resonance theory. We then extended these studies to other dye classes with delocalized charges.

Experiments were carried out on anthraquinone, azine, methine, oxazine and thiazine dyes. Color and fluorescence of each dye in solutions of distilled water, NaOH, HCl and H_2SO_4 were compared. Since many dyes become fluorescent upon absorption, spot tests were performed.

Reactions within dye classes varied with the nature and position of substituents. Conversion of dyes into the corresponding quinonoid imine caused hypsochromic shifts of color. Blocking of lone electron pairs in resonance with aromatic rings usually resulted in alterations of color similar to those seen in negative metachromasia. Several nonfluorescent dyes became fluorescent when their absorption bands shifted to shorter wavelengths. These observations are in agreement with current concepts of resonance and photochemistry, but cannot be explained by the quinonoid theory. (Supported by USPHS Research Grant HL 12147 from the National Heart and Lung Institute.)

MOORE, N. A., B. H. DOUGLAS and A. D. ASHBURN, Department of Anatomy, University of Mississippi Medical Center, Jackson, Mississippi. *The effects of an antihypertensive regimen on the thyroid gland of the spontaneously hypertensive rat (SHR).*

The thyroid glands are implicated in the pathogenesis of spontaneous hypertension. Fregly (Proc. Soc. Exp. Biol. Med. 149:124) proposes that thyroid alterations seen in the SHR are the result of a "thyroid depressing factor" of renal origin released in response to elevated blood pressure. If this hypothesis were true, then experimental reduction of the blood pressure should produce alterations in thyroid ultrastructure. To test this hypothesis we have subjected five 15 week-old SHR's to a daily anti-hypertensive regimen consisting of 0.04 mg reserpine, 3 mg hydralazine, and .65 mg chlorothiazide. Treatment for three weeks lowered their pressure from 187 ± 5 mmHg to 124 ± 12 mmHg. Five untreated SHR's with a pressure of 188 ± 4 mmHg served as controls. Electron microscopy revealed that follicular cells of untreated SHR's are characterized by relatively undilated granular ER, moderate amounts of intracellular colloid, and greatly increased numbers of pleomorphic dense bodies (lysosomes). The follicular cells of treated SHR's, which more nearly resemble those of normotensives, demonstrate dilated profiles of granular ER, increased colloid uptake, and a dramatic decrease in the number of dense bodies. (Supported by N.I.H. grant 5 S07 RR05386.)

MORGAN, A. H. and C. A. SCHNEYER, Departments of Anatomy and Physiology and Biophysics, University of Alabama in Birmingham, Birmingham, Alabama. *Effect of Partial Desalivation and Denervation on the Parotid Gland of the Immature Rat.* (Sponsored by E. G. Hamel.)

Bilateral extirpation of the submandibular-sublingual glands resulted in compensatory enlargement of the parotid glands. The age of the animal at the time of partial desalivation was a critical factor in the induction of and the extent of the hypertrophy. Animals which were desalivated and sacrificed prior to or at weaning showed little change in parotid gland weight, acinar cell size, or total gland amylase, but some changes were noted within secretory granules of acinar cells. When the period following gland ablation extended beyond weaning, statistically significant increases in gland weight, cell size, and total gland amylase occurred. Sympathetic denervation at the time of desalivation in postweanling animals resulted in increased amylase activity, somewhat decreased cell size, but little change in parotid gland weight. Parasympathectomy and gland ablation resulted in decreased gland weight, decreased cell size, and increased amylase activity. Thus, it appears that the compensatory response induced by partial desalivation is dependent on neural mediation. Further, it seems that the parasympathetic innervation to the gland plays the primary role in this mediation.

NAFTEL, J. and S. COHEN, Department of Anatomy, University of Alabama in Birmingham, Birmingham, Alabama and Department of Biochemistry, Vanderbilt University School of Medicine, Nashville, Tennessee. *Epidermal growth factor receptors in lower vertebrates.* (Sponsored by E. G. Hamel.)

Epidermal growth factor (EGF) is a 6000 MW polypeptide hormone known to be biologically active in birds and mammals. A survey was undertaken to determine if EGF receptors could be detected in species representing other vertebrate classes and several invertebrate groups. Tissue homogenates were incubated with ^{125}I-labeled mouse EGF, and the bound hormone was separated from the free by filtration. Specific EGF-binding was demonstrated in several organs of the smooth dogfish *(Mustelus canis)* and in liver of some of the teleost fishes tested. Specific binding could not be detected in reptiles, amphibians, invertebrate chordates, and non-chordate organisms. The EGF-binding activity of dogfish liver was similar to that of mouse liver with respect to time course of binding and affinity constant. The existance of EGF in non-mammalian animals has not been directly demonstrated, but the similarity of the EGF-binding properties between the dogfish and the mouse suggests that an EGF-like molecule exists in the dogfish and that this hormonal system arose early in vertebrate evolution.

NELSON, R. J., SUR, M. and KAAS, J. H., Departments of Anatomy, Electrical Engineering and Psychology, Vanderbilt University, Nashville, TN 37240. *Similarities and Differences in the Organization of Somatosensory Cortex in Mammals.*

Recent studies in a range of mammals indicate that the organization of primary somatosensory cortex may be quite different from the classical concept of a "homuncular" representation of the body surface. Using microelectrodes, we have mapped the "SI" in simians (Owl Monkey, Squirrel Monkey), in a prosimiam (Galago) and in a rodent (Grey Squirrel). Our results indicate that there are two complete cutaneous representations of the contralateral body surface within the traditional "SmI" of monkeys. The two complete and separate representations within areas 3b and 1 are approximately mirror images of each other, yet differ in the proportions of tissue devoted to identical body regions. As in monkeys, area 3b of Galagos contained a detailed cutaneous representation of the body surface. However, cortex caudal to "SmI proper" differed from that caudal to the similar region in monkeys in that the activation of neurons required more intense stimulation of the body, and receptive fields were large, thus masking obvious somatosensory organization. The SmI region in the squirrel was found to have unusual features including a double representation of the distal forelimb within one cytoachitectonic area. The cortical maps in each of these mammals contain sufficient discontinuities between representations of body regions and preclude adequate description of the cortical organization as either a homunculus or as rostro-caudal bands of isorepresentation.

Rather, the organization of somatosensory cortex is more appropriately described as a regionally somatotopic composite.

NORDEN, J. J., Department of Anatomy, Vanderbilt University School of Medicine, Nashville, TN. *Electron microscopy of degenerating synapses: Time-course of morphological changes in synaptic profiles in the optic tectum of the toad following enucleation.*

The time-course of morphological changes in the synaptic organization of the toad *(Xenopus)* tectum was studied quantitatively using EM in a series of animals sacrificed up to 6 mos. following unilateral enucleation. For each animal, the total number of synapses were counted in 10 grid squares located at symmetric loci in the superficial layers of both tecta. Synapses were classified into 5 types ranging from normal to late degenerating. Preliminary results indicate that by 24 hrs., 20% of the synapses in the denervated tectum are undergoing degeneration. Four days following enucleation, nearly 40% of the synapses are degenerating and there is a significant decrease in the total number of synapses on the denervated side. By 4 mos., only 50% of the total number of synapses remain on the denervated as compared to the normal side. Degenerating terminals were electron lucent or showed a gradual and progressive darkening of the cytoplasmic matrix. These results contribute to our understanding of the sequence of changes which occur following denervation.

PASCHAL, L. D., H. PUCHTLER and S. N. MELOAN, Department of Pathology, Medical College of Georgia, Augusta, Georgia. *Investigation into relations between structure and fluorescence of dyes.*

Previous studies demonstrated relations between structure and fluorescence of azo dyes. Furthermore, many supposedly non-fluorescent dyes became fluorescent when exposed to exciting light above 400 nm. It was therefore deemed of interest to investigate fluorescence microscopic properties of other dye classes.

Carnoy- and methacarn-fixed sections of human tissues were stained with various anthraquinone, methine, triphenylmethane and xanthene dyes. Sections were exposed to light from a xenon lamp at various wavelengths in the 350 to 700 nm range. When the 600-700 nm band was employed, fluorescence was recorded on infrared color film.

Xanthene dyes were strongly fluorescent in UV-blue light; in the 500 to 700 nm range fluorescence decreased with increasing wavelength of the exciting light. Similar results were obtained with methine dyes. With few exceptions, anthraquinone dyes showed little or no fluorescence; this can be attributed to dissipation of absorbed energy via the large resonance systems. Distinct relations were observed between substitution of amino groups in triphenylmethane dyes and absorption and fluorescence optima. The position of substituents apparently affected the intensity of infrared fluorescence. These observations indicate that the fluorescence microscopic properties of dyes are determined by their configuration. (This investigation was supported by an AMA-ERF Student Fellowship to Mr. L. D. Paschal.)

PEARSON, J. C., Department of Anatomy, West Virginia University, School of Medicine, Morgantown, WV. *A cytoarchitectural study of the ventral posterolateral thalamic nucleus in a primate (Galago senegalensis).*

The cytoarchitecture of the ventral posterolateral nucleus (VPL) was studied in *Galago* using Kluver-Barrera and Nissl stained sections and, to visualize cell morphology, two modifications of the Golgi technique. Five types of cells are evident. Large class 1 cells have tufted dendritic trees. The soma and proximal parts of the dendrites are free of appendages whereas the distal segments are covered by three types of appendages. Medium sized class 2 cells give rise to fewer and shorter tufted primary dendrites. They characteristically have clusters of small appendages at primary branch points of dendrites. Other large cells of the VPL appear to possess characteristics intermediate between class 1 and class 2 cells; the so-called intermediate cells. Based on indirect evidence all of the above neurons are presumably relay cells. Class 3 cells are Golgi type II neurons whose small round perikarya give rise to long dendrites. Their axons are intrinsic to the VPL; some ramify profusely within the vicinity of the dendritic field. Dendritic appendages are characteristically elaborate. Cells have been identified which appear to resemble 'neurogliform' and 'class V' cells. (Supported in part by USPHS Grant NS11327 from NINCDS to Dr. D. E. Haines.)

PHILLIPS, LINDA L. and JAMES E. TURNER. Department of Anatomy, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, N. C. 27103. *Acid Phosphatase Localization in the Newt* (Triturus viridescens) *Optic Nerve During the Early Stages of Wallerian Degeneration.*

The regenerative capacity of the amphibian visual system depends upon the rapid clearance of cell debris by highly reactive neuroglia, evidence for which has been found as early as 6 hrs. after lesion in the newt optic nerve (Turner and Glaze, *Anat. Rec.* '77). An earlier but similar response was verified at 0.5 hr. post lesion, (Phillips and Turner, *Anat. Rec.* '77). The present study examined the character of the early stages of Wallerian degeneration through acid phosphatase histochemistry. Newts were anesthetized, left orbital optic nerves cut and animals sacrificed after 0.5 and 6 hrs. Nerves were fixed for 6 hrs., washed in buffer overnight and processed for E.M. localization of acid phosphatase. Results showed vesicular labelling within expanding glial cytoplasm and at their plasmalemmal surfaces particularly around the periphery of digestive chambers, and along myelinated axons. Thin sections presented different planes of the labelled vesicles and their continuity with free extracellular enzyme among degenerating fibers in the chambers. These acid phosphatase labelled structures suggest an early glial role in the initial response to lesion through the release of lytic enzymes.

PLOUMIS, E., and E. A. SWANSON, JR., Department of Anatomic Sciences, Temple University School of Dentistry, Philadelphia, Pennsylvania. *Histological and clinical proof of the use of Negatan to cure aphthous ulcers and related pathologies of the oral cavity.*

A recent review of the literature reveals that there are many primitive and untested treatments for aphthous ulcers (canker sores) of the oral cavity and lips, and viral stomatitis. For several years we have been using a commercially available preparation for the treatment of these lesions. The preparation is Negatan (Negatol) and is available by prescription. Negatan was originally developed as a medication for vaginal ulcerations. Our training in histology told us there is little difference between the mucosa of the vagina and that of the oral cavity. It was with this histological thought in mind that we first experimented with Negatan as a treatment for aphthous ulcers.

This report will present microphotographs of normal oral and vaginal mucosae for comparison, a complete description of the treatment procedure, and clinical photographs of the lesions prior to and following treatment. We propose to show the dramatic cures accomplished when using this topical preparation. Appropriate comments on the etiology of these lesions will be presented and a discussion of the mode of action of the drug will be suggested. We feel that the results of our study are worthy of the consideration of stomatological specialists in both the medical and dental professions.

POHL, M. N. and SWARTZ, F. J., University of Louisville School of Medicine, Department of Anatomy, Louisville, Kentucky 40232. *Development of Polyploidy in B-cells of Normal and Diabetic Mice.*

This study was designed to clarify the relationships between pancreatic B-cell polyploidization and the progress of the diabetic syndrome in genetically diabetic (C57BL/Ks-db/db) and normal control (C57BL/KsJ) mice of the same age groups. Nuclear DNA content was confirmed by Fuelgen microdensitometry to be directly proportional to nuclear volume which was then used as an index of polyploidy. B-cell nuclei, identified by aldehyde fuchsin positive cytoplasmic granules, were traced by camera lucida and measured by semiautomatic particle size analysis in six different age groups: 4.5, 7, 9, 12, 14.5, and 17 weeks. The major conclusions are: (1) 1000 nuclei give a reproducible representation of ploidy class percentages within a particular pancreas; (2) islet size is probably not a significant factor in determining ploidy class percentages of diploid nuclear volumes as long as 1000 randomly encountered nuclei are measured; (3) the percentage of tetraploid nuclei in normal mice is consistently between 1.0 and 2.0% from 4.5 to 14.5 weeks of age and an increase to approximately 3.0% occurs at 17 weeks of age; however, further studies are required to determine the significance of this increase; (4) in all age groups studied, percentages of polyploid nuclei are significantly greater in diabetic than in control mice; (5) the percentage of tetraploid nuclei in diabetic animals is elevated 200% over controls at 4.5 weeks of age, remains constant until 12 weeks of age while other parameters such as blood glucose levels and body weights continue to rise, and increases significantly between 12 and 14.5 weeks of age. Implications of both the increased polyploidy observed at the onset of disease symptoms, and the dramatic increase occurring during the later stages of the disease, are discussed.

RICHARDSON, ELISHA R., Department of Orthodontics, Meharry Medical College, Nashville, Tennessee. *A Comparison of the Somatic Bony Face in Norma Lateralis in Two Ethnic Groups.*

The purpose of this paper is to take quantifiable data on the somatic bony facial profile of American Blacks and compare it with available data on the face of American Whites in order to assess similarities and differences.

Materials and Methods: Cephalometric roentgenograms were used to measure the angles of the face. Data were available on northern Blacks and southern Blacks also on northern Whites and southern Whites. The angles being compared were the facial angle, the sella-nasion-pogonion angle, the sella-nasion-point A angle, the sella-nasion-point B angle and the mandibular plane angle. The above angles were compared for within ethnic group differences and between ethnic group differences. The t-test was the statistical tool used to aid in the analysis of the data.

Findings: A surprising degree of similarity was observed in the angles of the somatic bony face of the two ethnic groups. The two racial groups from the northern United States had facial angles that were not different statistically. The same held true for the two groups from the southern part of the United States. The differences tended to be greater in the area interfacing with the dento-alveolar segment of the face. There appeared to be as great a difference in the means of the facial angles within the two ethnic groups as there were in the means of the facial angles between the two ethnic groups.

J. DAVID ROBERTSON and JUAN VERGARA, Dept. of Anatomy, Duke University, Durham, N. C. *The nature of a certain intramembrane particle.*

The lumenal epithelial cell of the mammalian urinary bladder contains membranes with arrays of particles in a P6 hexagonal lattice spaced at ~15nm. Freeze-fracture-etch (FFE) studies have shown that each outer leaflet particle has a corresponding amorphous ~8-10nm intramembrane particle (IMP) associated with it. Recently we have applied new FFE procedures to this membrane in isolation. The membranes are attached to a positively-charged glass surface, covered with a small copper disc and frozen in propane. The resulting sandwich is fractured under LN_2: thawed in the atmosphere and subjected to various procedures before being replicated at LN_2 temperature. Three distinctly different E-face patterns are seen: 1) The conventional amorphous ~8-10nm IMP array. 2) Similar arrays in which the particles appear as hexagonal hollow rings each having a hollow core ~3.5nm wide. 3) The E-face particle arrays sometimes merge with smooth sheets not appearing particulate but with high order. Light diffraction patterns of the sheets as well as the particle arrays reveal a lattice like that in the external membrane surface. Similar diffraction patterns are also obtained from the replicated P fracture faces as well as from the replicated protoplasmic surfaces. The hexagonal order thus extends all the way through the membrane.

ROSEBROCK, JOSEPH A. and CURTIS L. PARKER, Department of Anatomy, Bowman Gray School of Medicine, Wake Forest Univ., Winston-Salem, North Carolina. *Uptake and binding of (^3H)-estradiol by mouse hepatoma cells.*

Rodent liver has been shown to contain uterine-like estrogen receptors (Eisenfeld et al., 1976). The biological role of alpha-fetoprotein (AFP) is not known, but studies now indicate that this fetospecific protein may serve to bind estrogen during fetal development, thus aiding in the normal sexual development of the rodent brain. Mouse hepatoma cells (HEPA), designated BW 7756, were used to study the uptake and binding of ^{3}H-estradiol (^{3}H-E_2), since HEPA cells continue to synthesize AFP in culture. Cellular uptake of ^{3}H-E_2 increased linearly during the first 15 min and remained constant thereafter. Concentrations of ^{3}H-E_2 ranging from 10^{-10}M to 10^{-7}M failed to saturate the system. When these experiments were repeated using non-radioactive E_2 or diethylstilbestrol (DES) in 100-fold excess, cold-E_2 competed significantly, while cold-DES had no effect. Cytosol prepared from HEPA cells was incubated at 4°C in the presence of ^{3}H-E_2 and run on sucrose gradients of low ionic strength. No peak of radioactivity was observed in the 8S region of the gradient, but a peak was present in the 4S region. The 4S peak could be reduced by competing with excess cold-E_2, but not with excess cold-DES. These results, in additon to the fact that the AFP-E_2 complexes could be precipitated with monospecific antibody, indicate that the major estrogen-binding protein in HEPA cells is AFP.

ROSENQUIST, THOMAS and JOHN D. BUNCH, III. Anatomy Department, Medical College of Georgia, Augusta, Georgia. *The Reaction of Alcian Blue 8GX with Human Costal Cartilage: Changes with Aging.*

Human costal cartilage was obtained at autopsy from individuals of the following ages: fetal, 5 yr, 14 yr, 21 yr, 31 yr, 37 yr, 53 yr, and 61 yr. Mounted sections were stained with a 0.1% solution of Alcian blue 8GX in 0.1M or 0.8M $MgCl_2$ (Scott and Dorling, Histochemie 5:221). Stained sections were removed from the slides; weighed; dissolved in 17% nitric acid; and analysed for Alcianic copper with an atomic absorption spectrophotometer (Rosenquist and Rosenquist, J. Histochem. Cytochem. 22:104). The following results are reported in μg Cu/mg tissue:

AGE:	*Fetal*	*5*	*14*	*21*	*31*	*37*	*53*	*61*
0.1M $MgCl_2$:	9.5	—	7.5	3.4	3.1	1.6	1.1	1.1
0.8M $MgCl_2$:	2.5	1.3	1.1	1.6	1.9	0.8	0.9	0.8

In summary: Total Alcianophilia (0.1M $MgCl_2$) is reduced linearly from fetal through 61 years by almost 90%. Alcianophilia due to sulfate groups (0.8M $MgCl_2$) is reduced irregularly and to a lesser extent with aging; Alcianic copper due to sulfate groups is only 14.2% in the 14 yr sample; but is about 74% of the 61 yr sample. These results are consistent with a decrease of total carbohydrate with aging, and an increase in the proportion of keratosulfate (Kaplan and Meyer, Nature (London) *183*:1267). (This study was supported by NIH General Research Support Grant #10-12-04-2000-02.)

RUBERTONE, J. A. and D. E. HAINES, Department of Anatomy, West Virginia University, School of Medicine, Morgantown, WV. *Corticonuclear fibers to the interposed complex in a primate (Galago senegalensis): The anterior lobe and simplex lobule.*

Cerebellar cortical projections into interposed nuclei were studied in adult *Galagos* using a modification of the Fink-Heimer method. Two areas send axons into the interposed complex. A minor contribution originates from the lateral edge of the vermal cortex (zone B) and major contributions from the intermediate cortex (zones C_1, C_2, C_3). Fibers from zone B terminate in medial parts of the posterior interposed nucleus (NIP) and in the vestibular complex. Lobules II-IV send axons into the rostral areas of the anterior interposed nucleus (NIA) and into ventromedial NIP. Medical and lateral regions of lobule V intermediate cortex (C_1 and C_3) send major contributions into medial and lateral areas of the NIA respectively. Of these two only zone C_3 projects to both the NIA (as above) and the NIP. Fibers to the later are topographically organized. Lateral parts of the zone project to medial NIP while medial parts of the zone send axons into more lateral NIP. Zone C_2 of the intermediate cortex projects almost exclusively to two spatially separate areas located *only* in the NIP. Terminal fields in both the NIA and NIP are partially exclusive and partially overlap with terminal fields from either an adjacent lobule or an adjacent cortical area of the same lobule. (Supported by USPHS Grant NS11327 from NINCDS.)

SHARAWY, MOHAMED and NAYERA N. SHARAWY, Medical College of Georgia, Augusta, Georgia. *Effect of diphenylhydantoin on the human gingiva "Morphometric and fine structural study."*

Diphenylhydantoin (DPH) is the drug of choice in the treatment of Grand Mal and Psychomotor epilepsy. One of the undesirable side effects of chronic DPH therapy is the development of gingival enlargement. Previous studies have described the hisotpathological changes of dilantin gingival hyperplasia. The aim of the present study was to determine the epithelial and connective tissue changes, using morphometric and fine structural techniques, in gingival biopsy specimens obtained from male patients. All the patients exhibited severe DPH gingival enlargement. The control gingiva was obtained from patients that showed chronic inflammation but no gingival enlargement and history of no DPH treatment. The morphometric data showed a significant increase in relative volume of both epithelium and connective tissue in the DPH treated patients. The cells of the gingival epithelium showed an increase in tonofibrils, ribosomes, and an abnormally large and polymorphic keratohyalin granules. Intracellular desmosomes were also found. The connective tissue showed large amount of normal collagen, fibroblasts with highly developed RER, mast cells, polymorphonuclear leukocytes, plasma cells and lymphocytes. The data indicate that DPH may affect epithelial keratogenesis in addition to its known effect on gingival collagen.

SICKLES, D. W. and C. A. PINKSTAFF, Department of Anatomy, WVU Medical Center, Morgantown, WV. *Histochemical analysis of fiber types in hindlimb musculature of the tree shrew (Tupaia glis).*

A comprehensive analysis of fiber types in the musculature of the same animal does not exist in the literature. This study considered fiber type proportions in the tree shrew hindlimb. Hindlimbs from seven animals, killed under anesthesia, were immersed in cold (4°C), aerated Tyrode's solution and 32 muscles were dissected from each limb. Twelve histochemical methods for the demonstration of adenosine triphosphatase, several enzymes of intermediary metabolism, glycogen, and lipids were used. No visual difference in the staining intensity or localization of the final reaction product between fresh samples and those immersed for 4 hours was seen. Comparison of staining patterns of the above techniques in muscles revealed the metabolically active pathways in each fiber type. ATPase, succinic dehydrogenase and menadione-linked α-glycerophosphate dehydrogenase were used to classify the fibers as slow oxidative, fast glycolytic, or fast oxidative-glycolytic. Although all three fiber types were found in the hindlimb muscles of the tree shrew, the distribution and proportion of each fiber type varied with the specific muscle or, in some cases, with different parts of the same muscle. (Supported in part by USPHS Grant NS11327 from NINCDS to Dr. D. E. Haines.)

SIMSON, J. A. V., and R. HAPPEL, Departments of Anatomy and Biochemistry, Medical University of South Carolina, Charleston, South Carolina. *Cation Localization in Isolated Mitochondria.*

Mitochondrial function is highly dependent upon the concentration of cations within the various compartments of this organelle. We have utilized variants of the pyroantimonate method (Simson and Spicer, J. Histochem. Cytochem. 23:585, 1975) to localize and tentatively identify cations at the suborganelle level. In preparations of isolated liver mitochondria fixed with unbuffered pyroantimonateosmium, numerous fine deposits were localized within the intracristal space, and occasional larger deposits were present along the cristal membranes. In preparations fixed and reacted in the presence of cacodylate buffer, precipates were absent from the intracristal space, but the large, membrane-associated deposits were prominent. In the presence of phosphate buffer, deposits were virtually absent, except in some preparations incubated in the presence of calcium, in which deposits were observed along the matrix side of cristal membranes. We conclude that the intracristal deposits result predominantly from high hydrogen ion concentration, whereas the membrane-associated deposits are predominantly calcium. None of these deposits corresponded to the osmiophilic dense bodies, which rarely exhibited pyroantimonate deposition. (Supported in part by NIH BRS Grant #RR054520 to the Medical University of South Carolina.)

SMITH, K. V., B. H. DOUGLAS, A. D. ASHBURN, N. A. MOORE, and H. G. LANGFORD, Department of Anatomy, Univ. Miss. Med. Ctr., Jackson, Miss. *Effects of controlling maternal blood pressure in the spontaneously hypertensive rat on the development of offsprings.*

The present study was designed to determine whether drug treatment of hypertension adversely affects the offsprings of spontaneously hypertensive rats (SHR). Control levels were established for weight and blood pressure on 20 SHR. They were then bred. Ten untreated SHR served as controls. Ten SHR were treated daily with 0.04 mg reserpine, 3 mg hydralazine, and 32 mg chlorothiazide. The regimen reduced the blood pressure from 172 ± 4 mmHg to 110 ± 5 mmHg ($p<0.01$). Following delivery the treatment was stopped. The blood pressure rose to 178 ± 4 mmHg. The offsprings of the treated animals were smaller than the offsprings of the untreated animals. At 6 weeks the weight of the male and female offsprings of the untreated rats was 126 ± 10 g and 116 ± 4 g respectively while the weight of the male and female offsprings of the treated rats was 86 ± 5 g and 78 ± 2 g respectively. A weight difference persisted beyond 10 weeks. The pituitary weight/body weight ratio of the untreated male and female rats was 3.8×10^{-5} and 5.3×10^{-5} respectively and of the treated male and female rats was 2.8×10^{-5} and 3.7×10^{-5} respectively. The antihypertensive regimen adversely affected the development of the offsprings but histological survey of the organs failed to reveal obvious differences between the groups.

SOHAL, G. S. and T. A. WEIDMAN, Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *Development of the trochlear nerve: spontaneous and experimentally induced axon loss.*

While the occurrence of cell death in the embryonic nervous system is well documented, its significance in the formation of neural circuits is still uncertain. A loss of approximately half the number of neurons during normal development and a significantly higher loss in the peripherally deprived trochlear nucleus of the duck was observed earlier (EN 51:634, 1976). Axon counts of the trochlear nerve from day 11 through 27 (hatching) were made to determine whether the cells which die during development had sent their axons to the periphery prior to their death. If all trochlear neurons send their axons into the nerve, then the ratio between cells and fibers should be 1:1. If they do not, then this ratio must be less than 1:1. Initially, there is an abundant collateral sprouting which roughly coincides with the time of neuromuscular contacts suggesting some sort of interaction between the developing nerve and the muscle. Subsequently, large numbers of axons (approximately 97%) are lost from the nerve. Assuming all trochlear neurons send their axons into the nerve, the ratio between cells and fibers on day 12 is 1:20 and drops to 1:1 on day 18. Due to abundant sprouting it is difficult to establish that all trochlear neurons sent their axons into the nerve. (Supported by NIH grant GM23484.)

SPAGNOLI*, D. B., J. A. FORTNEY** and S. W. CARMICHAEL*, *Department of Anatomy, West Virginia University School of Med., Morgantown, WV, **Department of Anatomy, College of Osteopathic Medicine and Surgery, Des Moines, IA. *Description of the adult opossum adrenal medulla.*

The left adrenal is medial to the superior pole of the left kidney. The right gland is attached behind the IVC and the liver at a level slightly below that of the left gland.

Two cell types can be discerned in the medulla by light microscopy. Both possess granular cytoplasm but one is more eosinophilic and has slightly smaller, more rounded nuclei. The more eosinophilic cell type appears densely argyrophilic in silver-stained sections. The two cell types are always segregated into distinct groups.

The ultrastructural features of the medullary parenchymal cell are generally consistent with those described for chromaffin cells. Round to oval electron-opaque vesicles were abundant, and two cell types can be distinguished on the basis of the electron-density of the vesicles they contain. The more electron-dense vesicles were larger (300-350 nm) than the less dense vesicles (200-250 nm). The argyrophilic, dense vesicle-containing cell may be a norepinephrine-containing cell and the other type is epinephrine-containing. Other organelles are typical except for a large number of electron-translucent vesicles (about 75 nm) that appear to be associated with the Golgi apparatus but are widely distributed in the cytoplasm. These are distinct from extracullular groups of vesicles (30 nm) that may be synaptic vesicles. Other features include unmyelinated (and a few myelinated) nerves, collagen bundles, mast cells, and nearly homogenous oval profiles that may be ganglion cell processes.

STURTEVANT, R. P., Departments of Anatomy and Surgery, Loyola University Stritch School of Medicine, Maywood, Illinois. *Temporal Changes in Blood Levels of Ethanol in Anesthetized Rats Receiving Prolonged Constant-Rate Infusions.*

We investigated temporal variations in the rate of ethanol metabolism in urethanized rats receiving constant-rate ethanol infusions for 12-15 hrs. Rates of metabolism were determined indirectly by slopes of the linear blood-ethanol clearance curves, based on 30-min tail-vein samples analyzed gas-chromatographically. Initially, a priming dose of 1.25 g/kg ethanol was given i.p. in the early light or dark phase of the 12 hr:12 hr light/dark cycle; the urethane was given i.p. either before or after the ethanol. A prolonged intra-jugular infusion of 15% (v/v) ethanol, at constant rate, approximated the ethanol metabolic rate. Several instances of slope changes during the infusion suggested temporally changing metabolism, but the interference of ethanol absorption by the urethane caused excessive rat-to-rat variability. When urethanized rats were rapidly primed i.v. (0.93 g/kg), constant ethanol infusions (0.35 g/kg/hr) resulted in slopes that regularly varied with the phases of the animal's circadian system. Studies encompassed early, mid, or late hours of the light phase and the dark phase of the light/dark cycle. Results were consistent with a temporal variation in the rate of ethanol metabolism.

THATCHER, S. S., C. A. PINKSTAFF, R. S. POPE, and R. L. BUTCHER, Department of Anatomy, West Virginia University, Morgantown, WV. *Histoenzymology of the Rat Preovulatory Follicle.*

The 18 hours prior to ovulation represent a period of major transition in the preovulatory follicle. A detailed study of the histoenzymatic events occurring around the preovulatory surge of luteinizing hormone, which in the rat occurs on the afternoon of proestrus (Butcher, *et. al.* Endocrinology *94:* 1704, 1974), has not been made. Groups of 4 and 5 day cycling rats were killed at 12:00, 17:00, and 20:00 hours on proestrus. Fresh-frozen sections were incubated for demonstration of lactic acid dehydrogenase, α glycerophosphate dehydrogenase, β hydroxybutyric dehydrogenase, $\Delta^5 3\beta$ hydroxysteroid dehydrogenase, glucose-6-phosphate dehydrogenase, NADH and NADPH diaphorase; and succinic acid dehydrogenase. The granulosa cells show a marked differential activity with respect to location. Cumulus cells become markedly less reactive with respect to most enzymes studied, especially glucose-6-phosphate dehydrogenase and NADPH diaphorase. The corona cells are the most reactive cells of the cumulus particularly with respect to lactic acid dehydrogenase. Basally located granulosa cells show a very broad and increasing reactivity. This reactivity tends to decrease toward the antrum. 3β hydroxysteroid dehydrogenase, reactivity which is not evident in the granulosa of the non-preovulatory antral follicle, increases markedly in the preovulatory follicle. These changes are discussed in terms of steroid synthesis and oocyte maintenance.

WALDROP, F. S., T. D. YOUNKER and H. PUCHTLER, Department of Pathology, Medical College of Georgia, Augusta, Georgia. *Histochemical studies of Pneumocystis carinii.*

In the 1950's *Pneumocystis carinii* was identified in interstitial plasma cell pneumonia of infants. It also causes pulmonary complications in immunodeficient patients. Antibodies to smooth muscle were found in 52% of infected children, but it is not known which structures act as antigens. Furthermore, demonstration of *Pneumocystis carinii* and its various stages in tissue sections is difficult. We therefore studied histochemical and staining properties of these organisms.

Various reactions for nucleic acids, myosins, collagens, neutral, acid and linear polysaccharides, and indole derivatives were applied to methacarn-fixed sections of lungs from infants. To facilitate correlation with published data, other series were treated with periodic acid-methenamine silver or a Gram-Weigert stain.

Combination of the PAS reaction with cresyl fast violet proved most useful for studies of stages of sporogenesis and the surrounding capsule. Numerous structures containing myosin-like material were seen in alveoli, but could not be clearly correlated with the cycle of *Pneumocystis carinii* visualized by the Gram stain. The most striking feature in infected lungs were the conspicuous myofilaments in numerous interstitial and alveolar epithelial cells. (This investigation was supported by an AMA-ERF Student Fellowship to Mr. T. D. Younker.)

WARD, JAMES W., Department of Pharmacology, School of Medicine, University of South Alabama. *Further studies on the development of the nervous system of the marine catfish, Arius felis.*

The purpose of this investigation is to continue the studies on the nervous system and sense organs of a marine catfish, *Arius felis*. Embryos ranging from 5 to 50 mm were studied from living specimens, stained whole mounts and sections. In the 5 mm embryos the three primary divisions of the brain are slightly visible. Both neuropores are evident, also the auditory vesicles. The neural tube is closed only near the dorsal center. Present in the 7 to 9 mm embryos are the optic and auditory vesicles, the ependymal, mantle and marginal layers, the epiphysis, the neural tube, pituitary, two semicircular canals, utriculus, sacculus, olfactory tract, and sensory ganglia of nerves V, VII, VIII, IX and X; sympathetic ganglia and all divisions of the eye including the muscles. In the 11 to 16 mm embryo maxillary barbels contain two nerves, the diencephalon is divisible into components parts, the cerebellum has appeared. The white and gray matter of the cord is evident. In the 25 to 50 mm embryos nuclei and tracts of the cord and brain show recognizable organization.

WELLER, E. B., B. W. HARRIS, and F. K. HILTON, Department of Anatomy, University of Louisville School of Medicine, Louisville, Kentucky 40232. *Cardiac energies of activation in vitro from hibernators and nonhibernators.*

Studies in our laboratory have established parameters of function for *in vitro* preparations of avian and mammalian hearts (Weller, Harris, and Hilton, Comp. Biochem. Physiol. 57A: 73-76, 1977 and Harris and Hilton, Physiol. Zool., [in press] 1977). Further, we have shown through the use of Arrhenius plots that during *in vitro* cooling and rewarming of hearts from European starlings, the energies of activation (Ea) beginning at 23-25° C and below are three times greater than they are at higher temperatures (Weller, Harris and Hilton, Comp. Biochem. Physiol. [in press]).

The current study compares the Ea's of *in vitro* heart preparations from a hibernator, the big brown bat, *Eptesicus fuscus* and a nonhibernator, the mouse, *Mus musculus* (CF_1) during both cooling and rewarming. Hearts were perfused on a modified Langendorff apparatus and were cooled from 37° C at 1.5° C/min until electrical and mechanical activity ceased or until 1° C and then rewarmed at a similar rate. Mouse hearts ceased beating at 12° C and showed significant changes in Ea between 20-23° C. From 37-23° C and 20-12° C the Ea's were 17.4 and 35.9 kcal/mole, respectively. Upon rewarming the mouse hearts from 12-20° C and 23-37° C, the Ea's were 34.1 and 14.8 kcal/mole, respectively.

By contrast, hearts from bats captured in the summer maintained electrical and mechanical activity down to 1° C and demonstrated no change in Ea. During the cooling and rewarming phases Ea's were 16.8 and 15.8 kcal/mole respectively. Further, curves for both hearts demonstrated no hysteresis.

WELLS, JAMES P., Dept. of Anatomy, West Virginia School of Osteopathic Medicine, Lewisburg, W. Va. *Application of Complimentary Experimental Techniques to problems in functional Morphology: Telemetry EMG, Strain in bone, Kinetics and Kinematics.*

Many research questions involving the functional interpretation of a morphological complex are amenable to experimental study. Several complimentary techniques are reviewed as applied in problem solving and suggestions are offered as to the variety of research areas for which they may be appropriate. These approaches include telemetry, electromyography, measurement of bone strain by implanted miniature gauges, and the determination of the kinematic and kinetic properties of motion as recorded simultaneously with the collection of the previous telemetry data.

WELTER, D. A., T. H. ROSENQUIST, and J. SCHOLER, Department of Anatomy, Medical College of Georgia, Augusta, Georgia. *DNA Cytochemistry for Chromosome Analysis.*

Certain genetic disorders which result in retarded growth and development can be identified at the chromosomal level because of some structural anomaly. To be detected, such pathogenic alterations of the genome must be relatively gross because of the sensitivity of the methods used for their detection. Chromosomes are usually described on the basis of their "banding" patterns which depend upon fluorescence (quinacrine staining) or optical density (Giemsa staining). Cytochemistry is possibly the only way to increase the sensitivity of chromosome analysis. Furthermore, we suggest that the most effective procedures will be DNA-based and directly analytical rather than photometric. We are developing a method for analysis of chromosomes based upon the stoichiometric reaction of DNA with chromalum/gallocyanin (Einarson, 1951), and subsequent analysis of Cr in the chromosomes with energy dispersive x-ray analysis in the scanning electron microscope. The results will be both DNA-based and directly analytical. Chromosomes are so small that the ability of a photometric method to discriminate chromosomal structures is limited. But the electron probe method can resolve to 250Å rather than the 0.1μ for optical systems; the amount of information obtained from each chromosome is concomitantly increased, and more subtle alterations of chromosomes are detectable.

WILBUR, D. L., K. M. HARGROVE, and R. M. G. NAIR, Departments of Anatomy and Medicine, Medical University of South Carolina, Charleston, South Carolina. *TEM and SEM Ultrastructural Observations of Anterior Pituitary Somatotrophs Following Hypophyseal Portal Vessel Infusion of a New Growth Hormone Releasing Hormone.*

A new growth hormone-releasing hormone (GH-RH), purified from bovine hypothalamic extracts was infused into hypophyseal portal vessels of adult male rats. Anterior pituitary glands were prepared for TEM and SEM examination at 1, 5, 15, 30 and 60 min. following infusion. Blood was collected, serum separated and the GH-levels determined by rat GH-radioimmunoassay (RIA).

Somatotrophs from anterior pituitary glands infused with the new GH-RH displayed massive emiocytic activity at 1, 5, and 15 min. with maximum activity occurring at 1 min. Rough endoplasmic reticulum (RER) cisternae were diffused and dilated at 15 min. following infusion. Golgi lamellae were extensively distributed and contained more vacuolar and vesicular components than controls. An increase in thiamine pyrophosphatase localization was observed at 30 min. postinfusion. Acid phosphatase reactive granules were more numerous 30 and 60 min. following infusion, than in controls, maximal number seen at 60 min. The new GH-RH appeared to be specific to somatotrophs and induced the release and synthesis of GH from them. RIA-values of serum GH-levels confirmed these findings.

WOOD, J. G., B. J. McLAUGHLIN and F. I. BYRD. Dept. of Anatomy, University of Tennessee Center for the Health Sciences, Memphis, TN. *Ultrastructural Studies of Membrane Changes during Neuronal Aggregation.*

The use of reaggregating nervous system cultures provides a useful model for the study of many aspects of cellular associations during development. Our approach is to utilize immunocytochemical methods to study the changes in membrane associated components on aggregating cells and, in order to obtain baseline information on changes in normal membrane morphology during reaggregation, cell or aggregate suspensions taken between 0 hr and 14 days after dissociation are prepared for either standard thin section or freeze fracture analysis. Between 2 and 6 hr the cells become closely apposed on all sides by other cells and form small aggregates. At this time *puncta adhaerentia* junctions and focal junctions are present between apposed cell bodies and processes. Between 1 and 5 days, more growth cones and neurites are present and fewer focal junctions are seen. Synapses form between 5 and 7 days and continue to increase in number up to the fourteenth day. By 9 days, the peripheral border of each aggregate is composed of cells having numerous microvilli on their free surfaces and which are joined by *zonula adhaerens* junctions. Freeze fracture analysis of the early reaggregating cells (2-4 hr) reveals a sparse intramembrane particle distribution on the cytoplasmic and external membrane leaflets of apposed cells. By 2 days intramembrane particles on the cytoplasmic leaflet of apposed cells are more numerous and small clusters of loosely packed particles are seen, which may represent junctional contacts between reaggregating cells. These particle clusters increase in number and size as reaggregation proceeds. By 7 days other particle arrays which correspond to intramembrane specializations characteristic of excitatory synaptic junctions are seen on cell bodies and neurites with increasing frequency. These observations suggest that correlated cell surface and intramembrane changes are occurring during the initial stages of neuronal reaggregation, which may reflect a basic morphological reorganization of cell membranes during neuronal recognition and synaptic junction formation. (Supported by USPHS NS-12590; Fight for Sight, Inc., New York City [BJM]; Sloan Fellowship [JGW].)

YOUNKER, T. D., F. S. WALDROP and H. PUCHTLER, Department of Pathology, Medical College of Georgia, Augusta, Georgia. *Dye binding by collagens and elastin: effects of dye configurations and solvents.*

Previous investigations demonstrated striking effects of solvents on elastica stains; in absolute ethanol these dyes did not stain elastin, but collagenous pseudo-elastica was nicely colored. Dyeing in organic solvents has been studied by textile chemists, but the role of organic solvents in histological staining is only poorly understood. We tested effects of alcohols on the binding of sulfonated azo dyes.

Experiments were carried out on methacarn-fixed human tissues. Sulfonated mono- and disazo dyes with different configurations and degree of sulfonation were applied in water and in absolute methanol, ethanol, propanol, isopropanol, butanol, amyl and benzyl alcohol.

High molecular milling dyes colored elastin and collagen from aqueous solutions, but low molecular levelling dyes stained tissues only faintly or not at all. Methanol enhanced binding of many levelling dyes; the reactivity of high molecular dyes varied with the configuration. E.g. Fast Wool Cyanone G stained elastin selectively, whereas Niagara Blue 2B reacted with collagens, but not with elastin. Dye binding from solutions of higher alcohols also varied with the dye structure and tended to be favored by low sulfonation. These observations indicate that selective demonstration of elastin or collagens is determined by the structure of the dye and the nature of the solvent. (This investigation was supported by an AMA-ERF Student Fellowship to Mr. T. D. Younker.)

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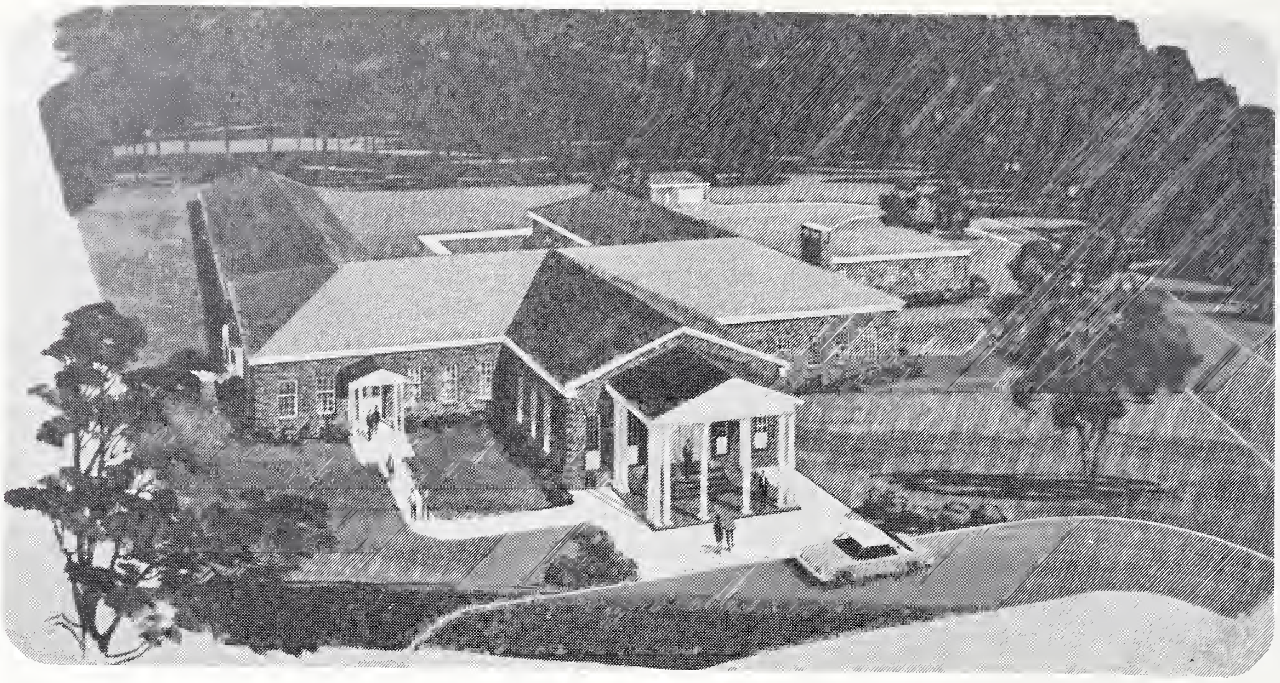

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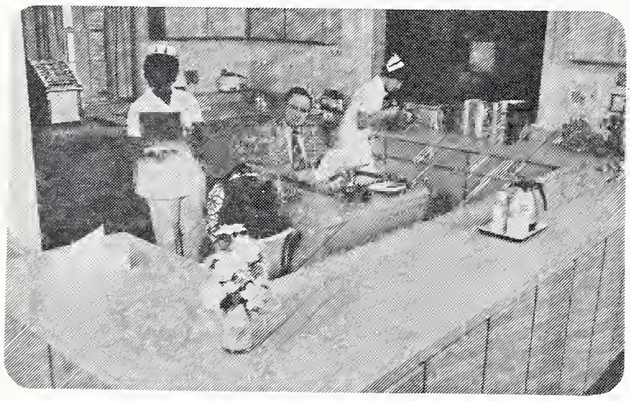

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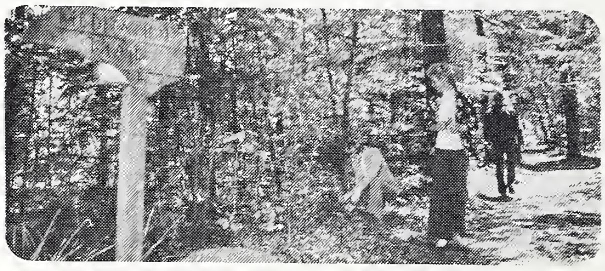

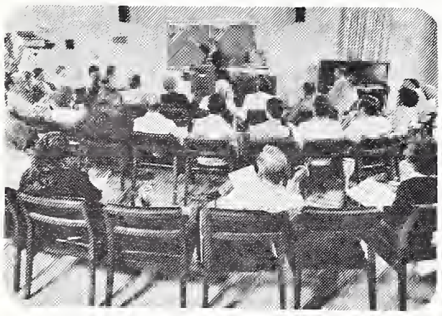

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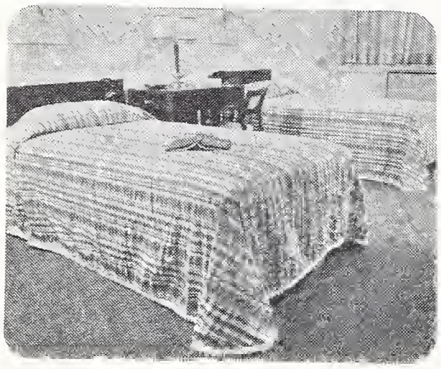

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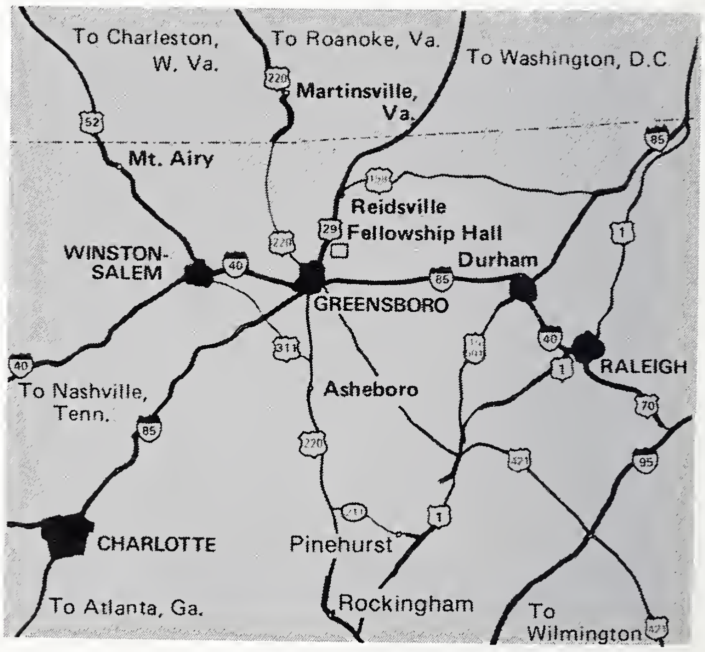

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OPHTHALMOLOGY — Age, 30. Graduated Univ. of Miami, Florida, 1974. Internship, Univ. of Alabama, 7/74-12/75. Residency, Univ. of Tennessee (Opthal.), 1/76-present. Licensed in Tenn. and Missouri. Board certified. Board eligible, 1979. Seeks partnership, single-specialty or multi-specialty practice in medium-sized community. Available 1/79.

OB/GYN — Age, 51. Graduated Long Island College of Med., Brooklyn, N. Y., 1947. Residency, Long Island College Hospital, Englewood, N. J., 2/47-6/48; Kings County Hospital, Brooklyn, N. Y., 6/49-6/50 and 6/52-6/53. Licensed in S. C. Board certified. Academic Appointments — Instructor, Gynecological Surgery, Flower Fifth Ave. Hospital, N. Y., 1956-60; Adjunct Prof. Human Sexuality, Ramapo St. College, Mahway, N. J., 1972-75. Member of AMA. Has sold practice of 18 years to come south. Seeks multi-specialty group or solo practice in medium sized community. Available 1/78.

INTERNAL MEDICINE, PULMONARY DISEASES — Age, 32. Graduated Medical Univ. of S. C., 1970. Residency, Univ. of Ala. Hospital and Clinics, Birmingham, Ala., 1971-72, Pulmonary Diseases; and Chief Resident, Internal Med., 1974-75. Fellowship, Univ. of Ala. Hospital, Pul. Diseases, 1976-78. Licensed in Ala. and Ga. Board certified, Internal Medicine; Board eligible, Pul. Diseases. U. S. Navy, 6/72-6/74. Seeks multi-specialty, single-specialty or partnership practice in large metropolitan area, preferably Low Country. Available 8/78.

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MEETING ANNOUNCEMENTS

The 59th Annual Session of the American College of Physicians will take place April 17-20 in Boston. The theme of this year's meeting is clinical pharmacology. For complete information, contact Convention Department, American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104.

* * *

The 34th Annual Congress of the American College of Allergists will be held April 1-6, 1978 at the Las Vegas Hilton Hotel, Las Vegas, Nevada. AMA C. M. E. Category I 30 hours credit will be offered. Registration fee is $75.00 for members and $190 for non-members. For information contact Frances P. White, American College of Allergists, 2141 Fourteenth Street, Boulder, Colorado 80302.

* * *

Howard University College of Medicine, in cooperation with the National Jewish Hospital at Denver, is presenting a short course on "The Clinical Management of Tuberculosis," to be held at the Washington Hilton Hotel, Washington, D. C., on March 10 and 11, 1978. Registration for physicians is $50.00, with no charge to students. For information write Continuing Medical Education, 2041 Georgia Avenue, N. W., Washington, D. C. 20060.

* * *

The University of North Carolina School of Medicine at Chapel Hill, North Carolina, announces the 11th Annual Malignant Disease Symposium, "Gastrointestinal Malignancy — Update for Practicing Physicians," to be held April 21-22, 1978 at Berryhill Hall in Chapel Hill. For additional information, write Oscar L. Sapp, III, M.D., 236 MacNider Building 202H, The School of Medicine, University of North Carolina, Chapel Hill, N. C. 27514.

* * *

The Fourth International Symposium on Psychopharmacology will be held by the Department of Psychiatry, University of Louisville School of Medicine on February 24-25, 1978. This year, the focus will be on "Depression." Interested persons should contact Herman C. B. Denber, M.D., Ph.D., Professor of Psychiatry, University of Louisville, Louisville, Kentucky 40201.

* * *

The 130th Annual Meeting of the South Carolina Medical Association will be held April 28 - April 30, 1978 at the Hilton Hotel at Myrtle Beach, South Carolina. Further information will be forthcoming shortly from the SCMA offices.

* * *

A symposium on "Psychiatric Manifestations of Physical Disease," sponsored by the Continuing Education Program of William S. Hall Psychiatric Institute, will be held April 6-8, 1978 at the Hilton Head Inn, Hilton Head Island, South Carolina. Speakers include Shervert H. Frazier, M.D., Samuel Silverman, M.D., Charles N. Still, M.D., and James S. Eaton, Jr., M.D. Registration fee is $75.00, and AMA Category I Physician's Recognition Award is 7 hours, with AAFP Credit 7 hours requested. For additional information, contact Joe E. Freed, M.D., P. O. Box 119, Columbia, South Carolina 29202.

* * *

The first annual postgraduate course on "Contemporary Clinical Neurology" will be held July 6-9, 1978 at the Palmetto Dunes Hyatt Resort on Hilton Head Island. This course is presented by the Department of Neurology, Vanderbilt University School of Medicine. It is accredited for 16 hours, Category I, Physicians Recognition Award, AMA. For information and registration, contact Vanderbilt Continuing Education, 305 Medical Arts Building, Nashville, Tennessee 37212.

THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

VOLUME 74 FEBRUARY 1978 NUMBER 2

JOSEPH IOOR WARING, M.D.
September 4, 1897 — December 21, 1977

IN MEMORIAM

The unexpected death of Dr. Waring, at his home at Old Town Plantation, was mourned by friends, physicians, and historians in South Carolina and around the world.

Among the many organizations to benefit from Dr. Waring's considerable talents and energies was the South Carolina Medical Association. He served as editor of *The Journal* for seventeen years and formed a Public Relations Program for the association. These and other activities were recognized in 1974 with the association's Outstanding Service Award.

Dr. Waring's singular and lasting contribution was the systematic chronicling of medical history in South Carolina. Although many persons have maintained interest in this subject in our history-conscious state, Dr. Waring realized and filled the need for an orderly and definitive approach. A short paper published at age 32 on "An incident in early South Carolina medicine" proved to be the harbinger of a prolific second career which blossomed relatively late in life.

His ancestry traced to a family which settled in Charleston in the late 17th century, Dr. Waring was born the son of Joseph Ioor and Emma Taber Waring. He attended the Episcopal High School of Virginia, and was graduated with first honor from the College of Charleston, and with second honor from the Medical College of the State of South Carolina. He then served a rotating internship at the Roper Hospital, and served residencies in communicable diseases and in pediatrics at the Willard Parker Hospital and at Bellevue Hospital, respectively, both in New York.

Dr. Waring was then persuaded by his professor to assume the directorship of a child health demonstration project at Murfreesboro, Tennessee, a position which he held for three years. In 1927, he returned to Charleston to enter the private practice of pediatrics. He continued in private practice for 34 years, during which time he rose from Assistant in Pediatrics to Clinical Professor of Pediatrics at the Medical University.

An accomplished pediatrician and teacher, he was active in his specialty societies and contributed to the pediatric literature. By 1942, his publications in national journals included papers on thyroid enlargement, beri-beri, mongolism, fetal malformations, kerosene poisoning, the tuberculin test, Wilms tumor, measles, oxyuris infestation, and nutritional heart disease. By 1942, he had also published six essays in medical history. The curriculum vitae which he supplied to the South Carolina Medical Association for its files listed medical history as a "hobby," along with fishing and print collecting.

The years of World War II were extremely busy for him due to the shortage of practicing physicians. This necessarily limited his research and writing, and it was to be nine years before another major historical article appeared. He managed, however, to publish a brief *History of the South Carolina Medical Association* in 1948.

Thereafter, he became increasingly active as a medical historian. In 1961, he published a significant essay, "The Influence of Benjamin Rush on the Practice of Bleeding in South Carolina," in the *Bulletin of the History of Medicine*. The same year, he retired from clinical practice and began what was later called his "second profession" —

historical research and writing.

In 1964, he published the first of three volumes of *A History of Medicine in South Carolina*, which outline medical history in our state from 1670 through 1970. The work, hailed by Dr. Richard Shryock as "among the best of state histories now available," was supported by a grant from the National Institutes of Health and was published through the South Carolina Medical Association.

Dr. Waring published 62 works dealing with medical history, and many other papers concerned with general history and pediatrics. Recently, during the nation's bicentennial year, a paper on Charleston medicine at the time of the Revolution appeared in the *Journal of the American Medical Association* and a paper on Charleston medicine from 1800 to 1860 appeared in the *Journal of the History of Medicine and Allied Sciences*. His labors were recognized with the evolution of the Waring Historical Library on the Medical University campus, housed in a building which had originally served as the library for the Porter Military Academy, which Dr. Waring had attended as a youth. Recently, friends had organized the Waring Library Society with the aim of promoting the facility into a major center for the study of medical history. Dr. Waring continued to work daily, and on the evening prior to his death attended a meeting of the Waring Library Society.

His service to other health organizations is said to have been without parallel. He was devoted to the Easter Seal Society for Crippled Children and Adults in South Carolina, which bestowed to him a special plaque. He served as chairman of the Charleston County Board of Health, a position he held until his death. In recognition of this activity, a plaque and portrait were hung in the hallway of the Charleston County Health Center in 1973. He received a certificate of appreciation from the South Carolina Hospital Association, the Award of Honor from the Carolinas Hospital Public Relations Society, and an honorary degree of Doctor of Letters (Litt. D.) from the College of Charleston. He was designated a Distinguished Alumnus by the Medical University of South Carolina, which he later served as chairman of the Sesquicentennial Celebration of 1974-75.

Dr. Waring served as president of the South Carolina Historical Society, and for four years edited *The South Carolina Historical Magazine*. He served as both secretary and president of the Medico-Chirurgical Club of Charleston, of the Medical Society of South Carolina, and of the Society for the Relief of the Families of Deceased and Disabled Indigent Members of the Medical Profession of the State of South Carolina. He was secretary of the Robert Wilson Medical History Club for many years, until his death. He also served on the council of the American Association for the History of Medicine. He belonged to the Study Section of the History of Life Sciences of the National Institutes of Health. He was senior warden of the vestry of St. James Church, Goose Creek, where he was buried.

Dr. Waring is survived by his wife, Ferdinanda Legaré Waring, and by three stepchildren.

In a preface to the medical biographies contained in his *History of Medicine in South Carolina*, Dr. Waring chose to quote John Brown, from the last century, on the historical fate of most physicians: ". . . it is the lot of such men to be invaluable when alive, and to be forgotten soon after they are dead; and this is not altogether or chiefly from any special ingratitude or injustice on the part of mankind; but from the very nature of the case. Much that made such a man what the community to their highest profit found to be, dies, must die, with him." Through his many activities, Dr. Waring was uniquely honored during life, and will surely not be forgotten.

— Charles S. Bryan, M.D.

OPEN HEART SURGERY IN THE COMMUNITY HOSPITAL: 100 CONSECUTIVE CASES WITHOUT MORTALITY

L. DIETER VOEGELE, M.D.*
WILLIAM H. PRIOLEAU, JR., M.D.
PETER HAIRSTON, M.D.

Surgical intervention in the heart was heralded by Ludwig Rehn almost 80 years ago, but the modern era of open heart surgery began with Gibbon's cardiopulmonary pump in 1953. In addition, surgical treatment of ischemic heart disease became possible with the introduction of direct myocardial revascularization techniques within the last decade.[1, 2]

Significant improvement in the quality of life and increased survival with a low operative mortality are the benefits derived from this operation.[3, 4]

This report summarizes the operative treatment and immediate post-operative follow-up on 100 *consecutive* patients who underwent coronary artery bypass grafts, isolated valve replacement or a combined operation of coronary artery bypass grafts and valve replacement at the Roper Hospital, Charleston, South Carolina. The emphasis of this report will be on the feasibility of these surgical procedures in a community hospital with a minimum of risk.

MATERIALS

The last 100 consecutive open heart surgical cases performed at Roper Hospital, Charleston, South Carolina, are reviewed. There were 89 males and 11 females, ranging in age from 28 to 69 years. The average age of these patients was 53 years. There were no deaths in this group of 100 open heart procedures.

All operations were performed using cardiopulmonary bypass with moderate systemic hypothermia, left ventricular decompression via the right ventricular outflow tract, hemodilution and crossclamping the aorta followed by hypothermic (4°C) cardioplegic arrest using glucose-potassium solution.

Table I enumerates some of the categories of patients found in this group of 100 successive cardiac surgical cases. Ninety-three percent of the patients underwent coronary artery bypass grafts, the rest requiring valve replacements. Thirty-three patients had suffered previously documented myocardial infarctions and an additional 12% showed evidence of left ventricular dysfunction. Seven patients underwent valve replacement alone and the great majority represented coronary artery bypass grafts with or without concomitant valve replacement. One patient underwent coronary artery bypass grafts and simultaneous carotid artery revascularization. Among revascularization patients 47 had endarterectomy of the coronary arteries done in conjunction with saphenous vein graft.

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* Ashley House, Lockwood Boulevard, Charleston, S. C. 29401

TABLE I

CARDIAC OPERATIONS
100 Consecutive Cases

Coronary artery bypass grafts	295
Single	2
Double	11
Triple	42
More than 3	34
Saphenous vein graft per case	3.28
Endarterectomy	47/100
Isolated valve replacement	7
Combined coronary artery bypass graft and valve replacement	2
Combined coronary artery bypass graft and peripheral revascularization	1
Intra-aortic balloon	7
Mortality	0

TABLE II

CARDIAC OPERATIONS
100 Consecutive Cases
Pre-operative Status

Previous infarction	33
Congestive heart failure history	15
Aneurysm	2
Arrhythmias	14
Mitral valve dysfunction	6
Ventricular dysfunction	12

DISCUSSION

Cardiac patients who are candidates for open heart surgery represent a group of patients whose quality of life has suffered severely and generally whose productive life has been jeopardized. If early and late results of these operations performed in a community hospital demonstrate acceptable mortality and morbidity then this may be an important instrument to return citizens to a productive and pleasant life in the community. Many of these patients can tolerate no exertion, and as can be ascertained from Table II, the majority have severely afflicted hearts. This series of 100 patients with no mortality encourages us in thinking we can offer an alternative to the extremely limited outlook facing the cardiac patients, particularly with coronary artery disease. Late results, as judged from a compendium of the literature[5, 6] seem to justify this outlook (Figure 1). As experience with the procedure has grown, so have the results become more gratifying. This has been made possible in part by more appropriate patient selection, improved methods of myocardial preservation and close cooperation between surgeons, cardiologists and intensive care nurses.

The proximity of the hospital to family and friends certainly makes the community hospital a favorable setting. Patients frequently comment favorably on the level of convenience and comfort, as well as the personal care they have received at Roper. The ease of continuity of care between the local referring physician, the cardiologist and the surgeon are advantageous. The average hospital stay was 8.9 days. Most patients (86%) were able to return to their homes in 10 days or less. The patient operated upon in a community hospital can thus plan to return to his home environment in a short time.

SUMMARY

Coronary artery bypass surgery and valve replacement surgery can be performed at the community hospital level with results equal to or better than in major university centers. This group of 100 patients includes all consecutive cases of cardiac surgery performed between December 1976 and August 1977 and was effected without a single mortality. Early results such as these for patients with serious heart disease and limited outlook for the future encourages us to continue offering patients open heart surgery in our community hospital. □

ADDENDUM:

Since submission of this article and through January 1, 1978, an additional 72 patients have undergone coronary artery bypass grafting or valve replacement at Roper Hospital without a mortality.

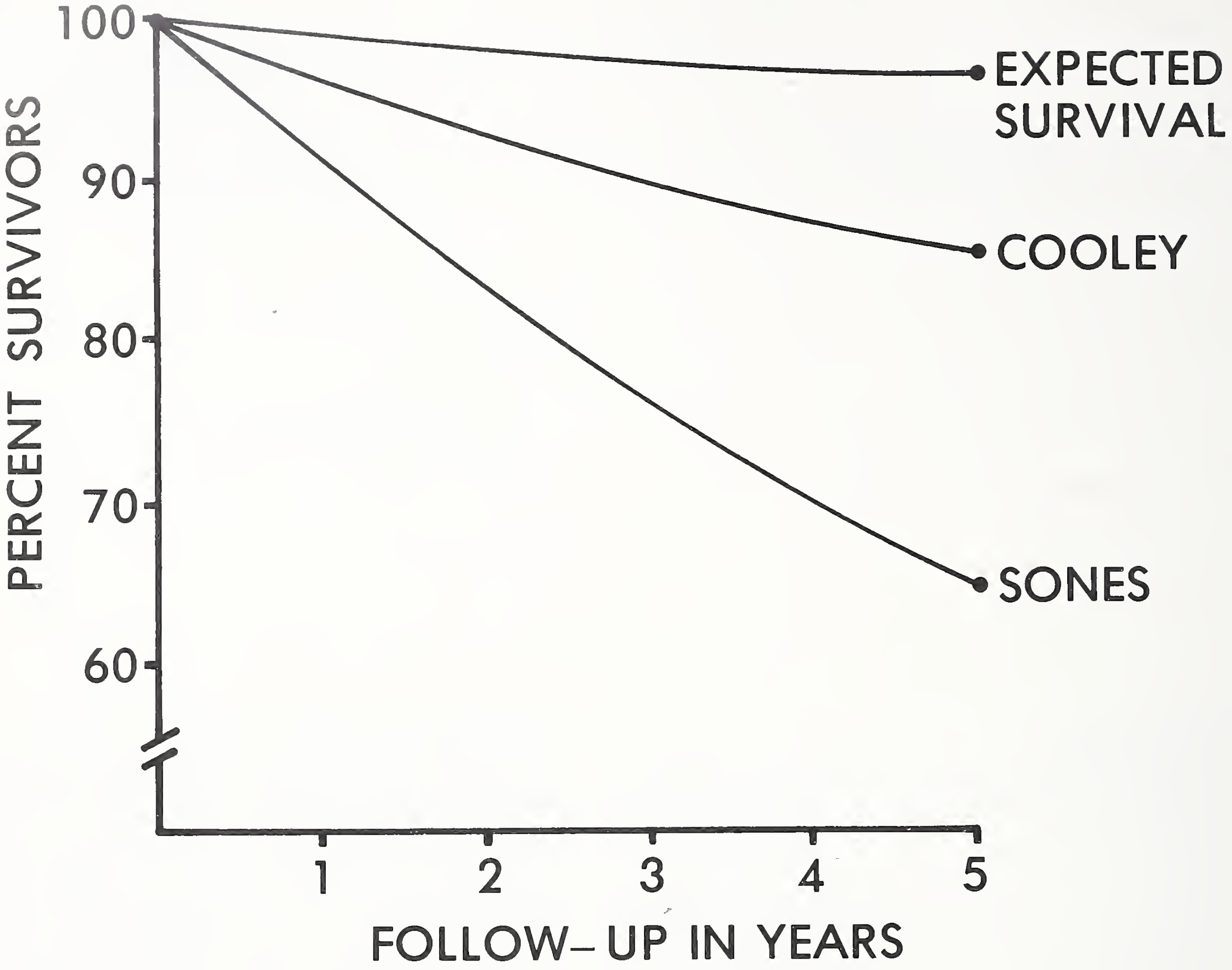

FIGURE 1 — **Projected time of survival. Top line: expected survival in age-matched unaffected patients. Middle line: survival among 4522 consecutive surgical patients. Bottom line: survival among 590 patients with proven coronary artery disease, but not treated with surgery.**

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PERCUTANEOUS RHIZOTOMY IN THE TREATMENT OF FACIAL PAIN*

STEPHEN E. RAWE, M.D.
JOSEPH M. MARZLUFF, M.D.
PHANOR L. PEROT, M.D., Ph.D.

INTRODUCTION

Trigeminal neuralgia or tic douloureux is a very painful affliction of unknown etiology which involves one or a combination of the divisions of the trigeminal nerve. Various medical and surgical modalities of treatment have evolved in the treatment of this disease. The use of carbamezepine (tegretol) or diphenylhantoin (dilantin) has resulted in significant relief of pain. Unfortunately, drug therapy usually provides only a temporary remission of pain.[1] The relatively new surgical procedures of percutaneous radiofrequency rhizotomy and microvascular decompression offer a long-term relief of pain in approximately 88-96% of patients with trigeminal neuralgia.[2, 3, 4] The purpose of this paper is to present the results of percutaneous trigeminal rhizotomy performed on ten patients at the Medical University of South Carolina.

CASE SELECTION

The patients' ages ranged from 32-74 years with a median and mean age of 59. All but one patient presented with symptoms of classical trigeminal neuralgia. The exception (L.C.) had sustained multiple facial fractures and traumatic enucleation of the right eye as a result of an automobile accident and had been experiencing severe, recurrent right periorbital pain. Drug therapy had been used in all patients and was discontinued because of refractoriness or toxicity. Three patients had been subjected to peripheral alcohol injections or neurectomies. Neurological examination was usually negative or occasionally a slight hypalgesia was detected in the area of pain. Plain skull roentgenograms were obtained to rule out any abnormalities of the foramen ovale. A computed tomographic (CT) scan was performed to eliminate the possibility of a cerebellopontine angle tumor which might be responsible for trigeminal pain. A CBC, chest roentgenogram, EKG, and urinalysis were obtained routinely.

PROCEDURE

The procedure is performed in the radiology department with the aid of an anesthesiologist and radiographic technician. Mild intra-operative neurolept anesthesia is occasionally employed when indicated; but, otherwise, an alert and completely awake patient is desired for optimal cooperation during the procedure. After the patient is placed in the supine position and the face and shoulder areas have been preped with Betadine solution, the foramen ovale is punctured by the method of Härtel.[5] A TIC* 19 gauge teflon insulated cannula with an exposed tip of either 5 or 7 mm and its stylet are introduced through the skin at 2.5 to 3 cm. lateral to the oral commissure. A gloved finger of the non-operating hand is placed inside the mouth to prevent needle penetration of the oral mucosa and, thereby, prevent subsequent intracranial contamination. The needle is then directed in a sagittal plane approximately 2-3 cm. anterior to the external auditory canal and in the coronal plane toward the mid-pupillary line. Before the foramen ovale is penetrated, lateral and submental vertex skull roentgenograms are obtained to verify the position of the needle in relationship to the foramen. After penetration, the same films are obtained to verify its position inside the foramen.

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* Department of Neurosurgery, Medical University of South Carolina, 171 Ashley Ave., Charleston, S. C. 29403

After correct positioning of the cannula, the stylet is replaced with a stimulating electrode which is connected to a radiofrequency lesion generator (RFG-AV)* (Fig. 1). Removal of the stylet frequently results in CSF drainage from the hub. An indifferent electrode is placed in the scalp or in the shoulder region. Electrical stimulation is then used to precisely localize the desired division of the trigeminal rootlets. Once the desired division of the trigeminal nerve is localized by electrical stimulation, the response to a gradual increase of heat by the radiofrequency lesioning device is determined. Appropriate painful responses to voltage stimulation of .5 volts or less and a heat tolerance of less than 47°C usually indicates that the needle is in optimal position. A short-acting barbiturate (methohexital) is then administered intravenously for general anesthesia.

The initial RF lesion of thermocoagulation consists of a 60 second and a 60°C lesion. Two to five minutes later when the patient regains consciousness and is cooperative, clinical testing to pain, touch, and corneal reflexes are performed. Analgesia of the involved division and trigger zone accompanied by preservation of the corneal reflex is desired. Repetitive 30-60 second lesions with incremental increases of 5-10°C can be utilized to obtain the desired result. Occasionally, lesions can be made very slowly without the use of methohexital.

RESULTS

Total relief of pain was obtained in 8 patients (See Table 1). In six of these patients, significant analgesia was produced in the involved division and the area of the trigger zone. One of the patients (E.K.) had no demonstrable sensory loss, and another (L.C.) had hypalgesia in a division other than that confined to his pain. Complete facial anesthesia on the side of the lesion occurred in one patient, and anesthesia involving two divisions was noted in two patients. CSF was observed from the hub of the needle in seven patients.

Two patients had only fair relief of pain with only minimal hypalgesia produced in the involved division. No CSF was observed from the cannula in these two patients.

The only significant complication may be the development of impending anesthesia dolorosa in one patient (R.B.). Also, mild weakness of mastication was noted in this same patient. A transient increase in salivation was noted in another patient (T.B.). The length of the hospital stay averaged two days, and the longest period of follow-up is 14 months.

DISCUSSION

This study demonstrates the ability, particularly in older patients, to utilize a closed-operative technique which requires only minimal anesthesia and a brief hospital stay in order to achieve a successful relief from trigeminal neuralgia. Controlled thermocoagulation of retrogasserian trigeminal rootlets with destruction of pain fibers but partial preservation of touch in conjunction with stimulation for accurate divisional localization has been popularized by Sweet and Wepsic.[4] Successful relief of pain in 88-96% of patients with trigeminal neuralgia has been achieved on a long-term basis.[3, 4, 6, 7] Significant complications of unintentional loss of corneal sensation, masseter weakness, and anesthesia dolorosa were less than 5% in most of the series. Rarer complications of intracerebral hematoma or abscess formation, cranial nerve palsy, and carotid artery injury have been less than 1%. All studies emphasize the need to produce analgesia in the involved trigeminal division in order to achieve long-term results. Better results appear to be correlated with the presence of CSF indicating that the needle was in the trigeminal cistern and, therefore, in the proximity of the retrogasserian rootlets. The additional presence of significant anesthesia following the procedure predisposed toward the development of anesthesia dolorosa or dysesthesias.

Our own small series conforms to these reported findings. Although the length of follow-up is admittedly brief (14 months in most), significant long-term pain relief can be expected in six patients. Two of the patients with good relief now, but with only minimal hypalgesia, may be expected to experience a recurrence in the future. Two of the patients who had only a fair result were advised to have the procedure re-

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* Radionics, Inc., 76 Cambridge Street, Burlington, Massachusetts 01803

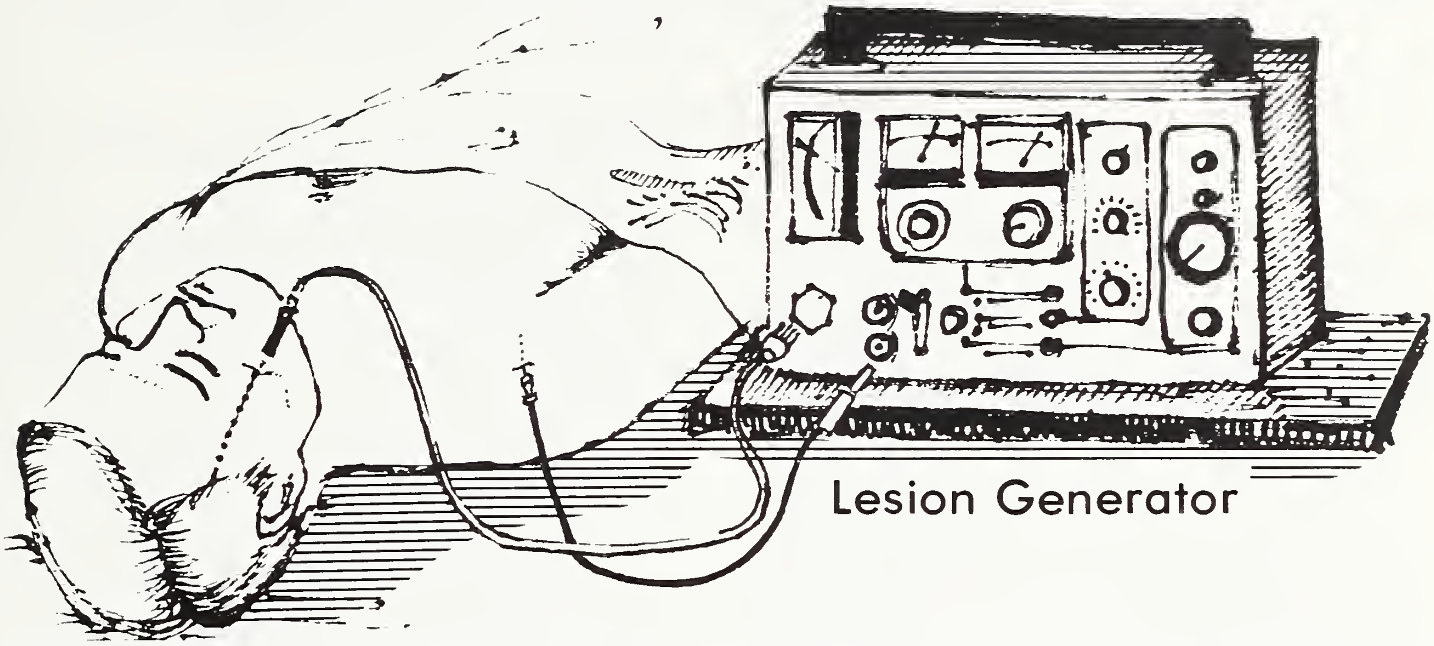

Figure 1 — Radiofrequency lesion generator with percutaneous stimulating electrode positioned in right foramen ovale. Indifferent electrode is in subcutaneous tissue of right shoulder.

TABLE 1

Pt.	Age	Pain	Division	Pain Relief	Hypalgesia Analgesia	Anesthesia	Corneal Reflex	CSF
RB	72	R	V2	good	V1,V2,V3	V1,V2,V3	-	+
ES	58	L	V2	good	V1,V2	V1,V2	-	+
BW	49	L	V2	good	V1,V2	-	+	+
PB	71	R	V1,V2	good	V1,V2	-	+	+
AF	32	R	V2,V3	fair	V3	-	+	-
KB	74	R	V2,V3	good	V1,V2,V3	V1,V2	-	+
OW	72	R	V2	good	V1,V2	-	+	+
EK	70	R	V2,V3	good	-	-	+	-
AS	59	R	V2	fair	V2	-	+	-
LC	33	R	V1,V2	good	V3	-		+

Table 1 — List of patients indicating involved division of trigeminal nerve and results of nerve lesioning.

peated on the same hospital stay but elected to tolerate the reduced level and frequency of pain. No CSF was observed from the cannula in these patients. Although unintentional corneal anesthesia was produced in three patients, no significant keratitis has occurred. The only significant complication may be the development of anesthesia dolorosa occurring in the patient with anesthesia in all three divisions who is now experiencing intermittent dysesthesias.

Microvascular decompression of the fifth nerve has been reported to result in successful pain relief in approximately 91% of patients with trigeminal neuralgia.[2] The main advantage of this procedure is that relief of pain is achieved without loss of sensation, thereby avoiding the complication of anesthesia dolorosa.[8] However, this procedure involves an open operative technique, general anesthesia, and a longer hospitalization stay than the closed procedure. It is felt that the microvascular decompression procedure is tolerated better by a relatively younger patient.

The relative ease in which the percutaneous trigeminal rhizotomy can be performed, periodic clinical examinations throughout the procedure, low morbidity and mortality, and the additional ease for repetitive procedures on the same hospitalization or a later hospitalization makes the percutaneous trigeminal rhizotomy procedure for the relief of trigeminal pain an attractive procedure, particularly in the elderly patient. ☐

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WHO WAS WEARING THE GOWN 40 YEARS AGO? (MEDICAL COLLEGE AND FACULTY REMINISCENCES)

H. RAWLING PRATT-THOMAS, M.D.*

Forty years in the span of history is a very short time — for an individual it is a long time — over half a life span if one is lucky. I have been at either the receiving or giving end of medical education for nearly half a century — thirty-seven years doing unto others what was once done unto me, but certainly with a greater reservoir of information from which to draw.

What are the most vivid contrasts between medical education in 1937 and today?

The most outstanding is the expanded body of knowledge. The amount of information with which the medical student of today is deluged is stupendous and stupefying. No one can supply a personal definition of "core curriculum" that satisfies the egos of each discipline so everyone attempts to be "comprehensive." Competition for brain cells is fierce and without quarter; factual data is staggering, although not much attention is paid to comprehension and problem-solving.

The control of infectious disease is difficult to comprehend by anyone who has not personally observed the transition. 243 autopsies were performed in the department in 1937. The prominent causes of death, in order of frequency, were: lobar pneumonia (24), syphilis (22), tuberculosis (13), and typhoid fever (6). Puerperal sepsis, scarlet fever, diphtheria and amebiasis furnish additional occasional causes of death as did otitis media and mastoiditis with extension to meninges and blood stream. One child from McClellanville died of falciparum malaria and her medical record states that a relative had also recently succumbed to this disease. Although not infectious, two cases of pellagra are also duly entered in the records.

The third dramatic change is the intensification of the impersonal relations between faculty and students, faculty and faculty, physician and patient and physician and the public. Perchance one professor meets another within the corridors with whom he is closely acquainted they are apt to embrace, the more reserved hazard a hearty handshake.

The fourth is the increasing participation of women in medicine. Once a rarity, and certainly uncommon forty years ago, they were considered curiosities. Many of them were! They are now commonplace, but only numerically. Many are extremely proficient, intellectually awesome and a joy for a professor to behold.

My association with the Medical College, now the Medical University of South Carolina, has always been inextricably linked with typewriters.

I arrived in Charleston in the fall of 1934, having barely survived the depression, and recently graduated from Davidson College. I had been notified of my acceptance by the Medical College of South Carolina in a letter from Dr. Cyril O'Driscoll whose typewriter mechanism was afflicted by alphabetic stuttering, many of the letters being either above or below the horizontal. This is not surprising as he typed all the correspondence having to do with admissions himself. He was registrar-in-totality. There were no private or departmental secretaries in the institution at this time. I do not know when the first secretary was hired, but the only secretary in the institution up to 1946 was in Dean Robert Wilson's office.

When I joined the department in 1940, I was intrigued by the creaking, clacking noises which emanated from Dr. Kenneth Lynch's inner sanctum. Dr. Lynch was Professor and Chairman of the Department of Pathology, not a vast domain as there was only one other pathologist besides myself. There are now 18 physicians and 9 doctors of philosophy in the department. At any rate these sounds originated from an ancient typewriter; undoubtedly, a refugee from the

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Smithsonian Institute and none-the-less remarkable was the fact that it was operated by Dr. Lynch himself. Even more startling was the fact that it soon became obvious that I, too, was going to be launched into the secretarial field. Upon completion of my first autopsy and being eager to record my findings, I inquired of the one other doctor in the department other than Dr. Lynch as to who was going to transcribe my protocol. He stared me straight in the face and made no reply other than to point a finger at my chest and then at another typewriter not quite as ancient as the one that Dr. Lynch used himself. It was obvious that such must be the case because there were no clerk typists or secretaries in sight.

It is only in recent years that I recovered from "typewriter shock." For many years my ears were so finely attuned to the flowing cadence of a group of clerk typists and secretaries in action that I could predict whether it was going to be a good or a bad day. If the orchestration was jerky and irregular, rather than flowing and ryhthmical, I knew that those irregularities of the psyche and soma of womankind were in the ascendancy and boded evil for the day's accomplishments. We now, not only have electrical typewriters but those that type independently of a typist's fingers and will continue to do so ad infinitum — Carbon paper has disappeared, supplanted by Xerox. Ball point pens are so universal that when I recently asked for a blotter the secretary thought I had spilled something on the floor. The anecdotes about typewriters are analagous to other developments at the Medical College. There were 40 students in my original class of 1938 — we picked up a couple more the following year to total 42. There were only 32 graduates in the class of 1936. There are now 165 in the graduating classes of the School of Medicine. The addition of the dental students to some of the conjoined classes such as Pathology allows the instructors to face an audience of nearly 200, the majority clothed in anonymity. There are a total of 2300 students in the Medical University including 342 on the House Staff (interns and residents). In 1934 there were 75 on the faculty, now there are over 1000. I serve on committees in which I have no idea as to the identity of all the members, and am sure that an equal degree of mystification is directed toward my presence.

Forty years ago the faculty was not only small, but a family affair. It was, for the most part, composed of Charleston practitioners of medicine. Although specialization was well established at this time it had not reached its zenith and the relationship between physician and patient was closely knit. Associations were enduring. There were no malpractice suits. Patients and physicians, not only had a professional association, but were frequently friends and, like as not, actually related. Who were some of the men who served on this inbred faculty?

For the most part the town was wearing the gown.

The two professors having the greatest impact on any incoming medical student in any School of Medicine are always the professors of Anatomy. My class was no exception. We were greeted by two memorable and vividly contrasting personalities, Arthur Marvel Lassek and William Cyril O'Driscoll. The former, young, handsome, restrained, taciturn, cold; the latter older, voluble, gregarious, earthy. Lassek, a midwesterner, was chairman of the department having succeeded the formidable "Dad" Phillips. O'Driscoll, Irish-Southern, patriotic, loyal, very much for God, Country and the Medical Student. Lassek was, in the vernacular, a cold fish. We quickly dubbed him "The Great Stone Face." I was president of the class and it was my lot to make any representations or requests to Dr. Lassek. How I dreaded those confrontations. Thrashing with a cat-o-nine tails would have been preferable; not that I was brow-beaten, verbally chastized or humiliated — just cool, frosty appraisal, a minimum of conversational exchange — he said nothing, I blabbered like an idiot, being careful to explain that I was merely an emissary, even intimating that my classmates' request might well be without merit.

I will always remember the first question he asked me on the final examination. Why is the latissimus dorsi called the "swimming muscle." Why indeed? I had been taught anatomic detail without any emphasis on function. At the moment all I wished to do was the "Australian crawl," and the remainder of the interrogation was an incoherent blur.

The legends surrounding O'Driscoll were legion — He was probably the most outstanding professorial character that I have ever known. With a pipe perpetually clamped between his

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teeth, this smoking device stimulated extra salivation and at close quarters if the situation was explosive one was apt to receive an extra christening as well as an answer. Ambidextrous, he would draw with both hands, sometimes simultaneously. He was a magician with the folds of his gown, illustrating the contortions and envelopes of the human body in a wonderous way. The course in gross anatomy was introduced by several weeks of study of Osteology. Dr. O'Driscoll presented each freshman with a bag or box of bones which in his eyes were of equal importance and value to the family silver. We were admonished to cherish them and threatened with dire consequences if each were not returned in mint condition. Thus began a most remarkable learning and interrogatory process which I have since dubbed "Bone-Braille." The skeleton is indeed the scaffolding by which the soft tissues are supported. Osteology as envisioned by O'Driscoll encompassed not only the boney framework, but everything to which it is related. He expected students to know the significance of every ridge, groove, hillock or aperture that each bone possessed. As bones come in contact with many things the scope of knowledge required was significant. One became able to fondle each bone with eyes closed and as each crevice or undulation was tacitly discovered one could expiate as to which muscle, nerve or blood vessel was related thereto. I liked the skull best of all. Its grinning vacuity seemed singularly appropriate to my own circumstances. There was a day when the foramen spinosum and what passed through it was central to my very being. If a student hesitated too long in answering a question Dr. O'Driscoll would bark "Shoot luke or give up the gun" or "man, bet your money and sleep in the street."

One of the most enduring and delightful anecdotes about O'Driscoll is as follows: A deeply religious student was failing freshman Anatomy. Dr. O'Driscoll took the student aside and informed him of his borderline grades and told him that he would have to return to the laboratory at night and on weekends in order to catch up and secure a passing grade. The student told Dr. O'Driscoll that he did not mind coming back at night and on Saturdays, but that Sunday was his Sabbath and was strictly observed. The student felt that he could not in good faith return to the dissecting laboratory on Sunday. Dr. O'Driscoll without hesitation said, "Son, you know the story in the Bible of the man whose ass fell into the ditch on the Sabbath and when asked by the Pharisees about this situation, Jesus said that the ass could be pulled from the ditch on the Sabbath without violating the laws of God?" As the boy nodded, Dr. O'Driscoll added, "Well, son, your ass in is the ditch."

Another memorable professor during my freshman year of 1934 was Francis Lejau Parker, Professor of Chemistry. He is representative of a reasonably large number of professors who never taught me anything about their subject, but inadvertently sometimes taught me something else. My instruction in Chemistry was left to Dr. J. C. Aull, but Dr. Parker was a wonderful common-sense philosopher and delightful raconteur spinning off experiences that he had with the Parker Laboratories, a private consulting firm which he managed. The most vivid story I remember was his conversation with a lady who complained about an eel that had entered her washbasin via the water spigot. He was masterful in dealing with the public and he was handled delicately by attorneys as he was renowed for his repartee from the witness stand.

I still have in my possession a letter dated Oct. 9, 1935 which reads: "Dear Mr. Pratt-Thomas: I have nothing to do with appointments under NYA and my opinion is not asked. Hope you will receive appointment and I shall be glad to facilitate work for you if I can. Sincerely, F. L. Parker."

I did receive the appointment and worked for Dr. Parker. It helped put a little butter on otherwise dry bread. I acknowledge my debt to Dr. Parker for assisting in moulding my attitude toward many things which were a lot more important than the Biochemistry he didn't teach me.

Kenneth Merrill Lynch, the tough, hard-minded Texan was my mentor for many years. Kenneth Lynch was a well organized and lucid lecturer, concise and stimulating; he was a friend of the medical students, a constant guardian of their welfare, and only rarely did he develop an antipathy to a student. He never lost sight of the fact that students were the most important component of a medical college. I recall having seen him perform only one autopsy; this case related to a death produced by the elixir of sulfanilamide in which diethylene glycol (antifreeze) had been used as the vehicle (solvent) for the sulfa drug. There were few situations in which Dr. Lynch failed to be totally in control. One of those was the performance of frozen sections, not commonplace, but in the late 1930's and early 40's an event of considerable magnitude. As soon as Dr. "Commodore" Buist or Dr. "Colonel" Cathcart requested a frozen section, Dr. Lynch became nervous, even jittery. I believe that Dr. Lynch felt insecure in doing what was then a relatively rare procedure with instrumentation infinitely less sophisticated that it is today. I recall that Dr. Lynch cut his finger during the last frozen section in which I recall him participating and I was glad that as my expertise developed Dr. Lynch was not present, as his nervousness was contagious. The only other occasion in which I saw Dr. Lynch bested was in a confrontation with Dr. Paul Kimmelstiel. The Marlboro County Medical Society has an annual dinner and scientific program which has become a celebrated event. Famous for its oyster pie, camaraderie, and worship of Bacchus it has served as introductory vehicles for many physicians recently moved to the sister Carolinas. Dr. Kimmelstiel had recently become the Director of Laboratories at Charlotte Memorial Hospital. He was the guest speaker and presented a clinicopathological conference having to do with cancer of the cecum, chronic blood loss and a strange compensatory marrow hyperplasia. I was young and poorly schooled in the medical politics of South Carolina, but I was soon to be educated and this encounter was my introductory lesson. Various medical politicians from across the state were in attendance and they seemingly chose Dr. Lynch (no mean medical politician himself) to challenge this German upstart who dared poach upon their territorial rights. Dr. Kimmelstiel proved worthy of the challenge and proceeded to refute with unassailable logic each critical observation made by Dr. Lynch. These two instances are memorable because they happened to Dr. Lynch so rarely.

Francis (Frank) B. Johnson was Professor of Clinical Pathology. Snowy haired with aquiline features he was demanding and rigid in his student relations. He was prone to mumble in ordinary conversation and this tendency was aggravated when he lectured, his presentations being delivered in a dreary monotone. Frank was to a student an academic "nit-picker" much given to selecting questions from portions of fine print in Todd and Sanford's text on Clinical Pathology. I passed his final examination by "spotting" him on a footnote concerning the clinical pathologic procedures which might be used in the diagnosis of diseases of the nose. I hated the course; he was not one of my favorite professors. His meticulous attention to detail, regarded as "nit-picking" by a student is well illustrated by the following clinical and laboratory episode. During my residency at Cincinnati General Hospital I had observed and done autopsies on a number of cases of Weil's disease. Upon joining the faculty at the Medical College, all cases of jaundice in Roper Hospital were, to my mind at least, Weil's disease until proven otherwise. We proceeded to try to culture the Leptospira from the blood of a likely patient during the time that the spirochetemia might be expected to be at its zenith. In a few days, examination of the culture dark field revealed innumerable agitated, writhing, shimmering spirochetes. Or so it seemed. Dr. Johnson peered into the microscope, but was surprisingly non-committal considering the overwhelming nature of the evidence. Eagerly a drop of fluid was appropriately stained for spirochetes. The slide was blank. The stains were checked and stained again. Another blank. Meanwhile Dr. Johnson was mumbling to himself and shuffling through an ancient filing cabinet. He retrieved a reprint concerning the Brownian movement of fibrin strands in a culture media containing plasma which might suggest spirochetes to the unwary. Such a man was Francis B. Johnson, precise, demanding, detailed, a gentleman to whom I became greatly attached.

John van de Erve, the Dutchman, was chairman of the department of Physiology. A native of the Netherlands, he spoke in a rich, sonorous, heavily accented brogue and did so fluently and well. This capacity for expression had undoubtedly been developed by his activities as a preacher for he was a Presbyterian minister as well as a physician. Of all the professors to confront the medical student, he inspired the greatest dread. They quailed before him. The reason for this terror was Dr. van de Erve's well established proclivity for failing the majority of his class. He struck them down with impunity, to such an extent that the faculty had to reason with him, in order to avoid self-liquidation; no medical students left to teach. His arrival in the classroom was dramatic. He came, appropriately, from on high. As the class apprehensively cowered in their seats a commotion was to be heard in the upper story, followed by a drum-roll of feet as he catapulted down the wooden stairs, suddenly metamorphosizing onto the podium with a flourish of the tail of his white gown. It was enough to give one cardiac arrest. He always ran down the stairs and was vigorous in all his mannerisms. Dr. van de Erve was intolerant of cursing and there was much in physiology to be blasphemous about, particularly kymograph drums on which to record the twitchings of some amphibian or animal. These were prepared by coating can-like cylinders with carbon deposited by an oily flame. A careless thumb or sleeve could obliterate an afternoon's experiment, and like as not the drum refused to revolve when the twitching stylet was at its best or turned inexorably when there was no twitch. On such an occasion one of my classmates was mumbling foul imprecations and we warned him that if heard by van de Erve his failure would be assured. As he raised his head from the reluctant instrument with an oath Dr. van de Erve materialized at his elbow. The shock was too much and he literally shouted: "Great God, there he is!" Much to our surprise he passed the course.

Dean Robert Wilson was to a medical student a dignified, austere, thoroughly frightening man. His charm and wit were reserved for later years when we met on a more equal footing. As an experienced participant in the Great Depression, I worked during my entire time in medical school, and served while still a junior student as an intern in a local hospital. One of Dr. Wilson's patients was assigned to me. The man was from one of the neighboring sea islands and had been prostrated by a severe headache and a series of chills and fever. The patient's environmental background and symptomatology clearly indicated malaria, at least to me. I was summoned to the Dean's Office by a message that Dr. Wilson wished to see me. With greatly intensified symptoms of stress, I repaired thereto and was confronted by the Dean. Well note that the Dean confronted me — I did not confront the Dean. With finger tips rhythmically tapping, he inquired as to the status of "our" patient and my opinion as to his progress. This was on Monday morning and I had not yet seen the patient on this day. Greatly heartened by the knowledge that I was not being dismissed for sins not yet enunciated, I felt on surer ground, reviewed the man's home place and recited his symptoms, opining that malaria was the culprit. Dr. Wilson's finger beat increased and after some cursory questions about other manifestations of malaria, he asked how often it produced a skin rash. A rash? What rash? Dr. Wilson gently informed me that our patient had suddenly erupted with a generalized dull, red macular rash and suggested that I reexamine the patient and submit an alternative diagnosis. It was thus that I learned about endemic typhus fever; subsequently always visited patients at least twice a day and always did so before Dr. Wilson arrived.

Other professorial characters of the 1930's made impressions of one sort or another in the clinical years. Two of my favorites were William Atmar "Billy" Smith and Olin Burnham Chamberlain.

Billy Smith became a close personal friend. He was surely the epitome of the physician, the apotheosis of the bed-side manner. His patients believed in him. Possessing charm and charisma, I am not sure that patients cared about what he said to them as long as he kept on talking. He was a man with a strong sense of right and wrong, highly ethical, a champion of causes, — He was the guiding and driving force in the establishment of the tuberculosis sanatorium, Pinehaven, in Charleston, now occupied like everything else by a shopping center. His scientific curiosity was insatiable. He undoubtedly obtained more autopsies than any private practitioner than I have ever known, and they were always obtained in the same way — the autopsy permission was written on a prescription blank, unwitnessed, and ran roughly as follows: "I hereby give Dr. Wm. Atmar Smith permission to perform an autopsy on my wife or husband, etc." Of course, it was not he, but I, who performed the autopsy. I did them in all manners of mortuaries, well remembering more than once kneeling on the floor beside a low bench or pallet in a Negro undertaking establishment without the benefit of running water and performing an autopsy on a patient whose tuberculous cavitated lungs teemed with tubercle bacilli. I would not do it again. My scientific fires though not quenched have at least been banked.

Olin Chamberlain was the first Professor of Neurology and Psychiatry in the Medical College. A big man, mild mannered and articulate he inspired confidence. It is my understanding that he performed the first cisternal puncture in Charleston. I know that he so accurately and precisely diagnosed, from my accounting of the symptoms, a spinal cord tumor in my mother while we were driving to Sumter to see her in consultation that Dandy of Hopkins needed to do little more than operate.

Robert Spann Cathcart, "The Colonel," Chairman and Director of the Department of Surgery was arbitrary and dictatorial. He was dubbed "Great God Almighty" by the students. He was the keeper of the seal insofar as appointment to the surgical staff was concerned. I do not recall ever hearing him lecture but saw him operate on several occasions. He used to stand on the portico of Roper Hospital watching the students cross the street from the Medical College into Roper. A symbol as it were of the division between the town and gown, albeit wedded in an uneasy alliance. He would occasionally call to a student "Young man come here. What is your name?" This was tantamount to disaster as the legend had developed that should you be so summoned by Dr. Cathcart that you would flunk at least Surgery and probably in totality, a rumor by no means alleviated in that I personally knew several students to which this befell. Rumor and rumor mongering was rampant among the students enhanced by such individuals as Dr. Cathcart and senior medical students who were always making dire predictions about those of us in the lower ranks.

There were many more: Theodore Ellis Bowers — "Teddy" Bowers — probably the greatest local natural surgeon of his era, smooth, fluid, sure without lost motion. His sartorial trademark was a red rose in his lapel, dark suits in the winter, white linen in the summer. He operated by choice in the early morning 7 a.m. or before. There was no air-conditioning. I arrived in the operating room to assist on more than one occasion as he was leaving. Greeted with a sardonic "Good morning, Doctor!" he would be all smiles. I think he loved it and probably had started as close to six o'clock as availability of nurse anesthetist and nurse assistant would allow.

Robert Meek Hope, Otolaryngologist, everything but meek, was another early operator. His favorite expression during a tonsillectomy if you did not aspirate the blood and clots with the facility that he desired was "Right square ("Squar") into the lungs."

Frank Gendron Cain, splendid lecturer and equally talented diagnostician, particularly in the field of female complaints. Bombastic, blustering John Sumter Rhame, surgeon prototype of another generation, termed "Healing Jesus" by the irrepressible medical students. Lester Arnauld Wilson, Obstetrician, and therapeutic iconoclast, cigarette everlasting dangling from the edge of his lip even when lecturing. His favorite expression concerning the handling of obstetrical complications was "you can try, but it won't work."

Mylnor Wilbur Beach — irascible pediatrician — academic autocrat. He ran a tight ship. The department of Pediatrics was the cleanest and most orderly department in Roper Hospital. While serving on the Pediatric rotation we met with Dr. Beach every morning at 8 a.m. sharp and underwent an inquisitional hour of interrogation. I do not remember much of what we talked about, but I recall that apple juice loomed large in Dr. Beach's armamentarium. Virtually unknown now, deaths from rheumatic fever, polio and tuberculous meningitis were common. Dr. Beach regularly followed each case to the autopsy table.

The witticism concerning a local surgeon Dr. William Prioleau, affectionately known as the "thyroid thief" because of his proclivity for thyroidectomy may be of interest. Dr. Prioleau also made a fetish of sterile surgical technique — meticulous scrubbing, gowning, masking. After the birth of Dr. and Mrs. Prioleau's first son, an irreverant local practitioner remarked to Dr. Prioleau in my presence "William, that was quite a break in sterile technique."

And "so as the old order changeth, yielding place to new." Through the millennia of time student-teacher interactions have occurred in all types of intellectual exercises. Communication between faculty and students in medicine is more difficult today. The students have changed and so has the faculty. My eyes may be filmed with nostalgia, but I think the professors of bygone days were more individualistic; perhaps we were simply better acquainted. We certainly were more cognizant of faculty foibles and idiosyncrasies and they of ours. They were not shrouded in the pall of standardization. There was closer contact between student and instructor and this resulted in greater mutual revelations as well as better understanding. □

PATIENT PACKAGE INSERTS: A CONCEPT WHOSE TIME HAS COME?

The consumer's right to know is an irreversible and desirable trend of the Seventies. It extends, and properly, to a patient's right to know more about his or her prescription medications. One way, gaining favor, is through patient package inserts. Wisely-prepared and properly distributed when medically indicated, they could markedly improve patient knowledge and drug therapy—laudable goals by anyone's standards.

The PMA endorses these goals and will work with government, the health professions and consumers to achieve them.

The Advantages

The concept holds promise of benefits: better patient understanding of the product prescribed, better adherence to the treatment plan, and more awareness of possible side reactions.

Every doctor has had patients who fail to finish antibiotic regimens because they feel better. Some patients assume that if one tranquilizer or analgesic is good, two may be twice as good. Still others fail to report dizziness while on antihypertensive therapy—and so on.

Problems like these might arise less often if the patient received written information in addition to verbal instructions. Some studies suggest that patients are more receptive to such materials, and they more often understand the verbal instructions and follow them, when inserts are used.

The Disadvantages

There are also some potential problems. Obviously, the inserts must be clearly phrased, without extraneous or complex detail. How much information is enough? How can it be kept current? Should all patients receive the same information? Should inserts be included with all drugs? Should only potential problems be listed or are patients better off with a "fair balance" presentation that describes usefulness as well as drawbacks?

These and similar questions require answers, since model inserts have yet to be properly developed and tested. Despite the need for these studies, the FDA is proceeding prematurely with inserts on selected products. We think the Congress is the only place where the matter can be given the proper legal status and direction, particularly since it represents a conceptual change in the legal, medical and social framework of the nation's prescription drug information system.

The Solution

The PMA believes that carefully-devised pilot studies of various kinds of inserts are needed. They should be developed and implemented with full participation by doctors, pharmacists, consumers, communications experts and the drug industry. Such studies will provide reliable pathways to follow, so that inserts will be useful aids to medical practice.

And particularly we think that you should be closely involved in this debate and in these studies and decisions. Otherwise, people with less experience and qualifications may control the purposes, content and use of a tool with considerable promise for improved patient care. It could make a difference in your practice tomorrow, and more importantly, in the health of your patients.

PMA
THE PHARMACEUTICAL MANUFACTURERS ASSOCIATION
1155 FIFTEENTH ST., N. W., WASHINGTON, D. C. 20005

Editorials

JOSEPH IOOR WARING — AN APPRECIATION

To have many friends; to serve ably in one's profession and to teach others; to have one's avocation blossom into a second career; to become the acknowledged authority in one's field of interest; to receive just recognition during one's own lifetime; to maintain one's perspective and sense of humor through it all; to live, in good health, well beyond the threescore year and ten; and to die at one's home, after a full day's activities and with plans for the morrow — all these are things greatly to be prized. While we mourn the loss of Dr. Waring — for his family, for medicine, and for ourselves — we marvel at all which he accomplished.

His death brought forth many recollections from those who knew him well. He was a delightful man — genteel, friendly, witty, patient. Many recall that his pace seemed to be relaxed, unhurried; he must have possessed an exceptional ability to budget and organize his time and to set clear priorities. Some recall that he sometimes turned aside suggestions that he should seek high offices. He worked long and hard behind the scenes for causes of his choosing. Recognition came to him; he did not seek it.

He encouraged others. Dr. Neill W. Macaulay, for example, recalls that it was Dr. Waring who first suggested that he create a permanent museum from his vast collection of historical items related to dentistry, and continued to promote the idea. When the Macaulay Museum of Dental History was finally dedicated, Dr. Waring's remarks were quite brief. Dr. Macaulay remembers that he tried to get his long-time friend to make a major address, but that Dr. Waring deferred to others, and simply accepted the collection on behalf of the Medical University of South Carolina. Such modesty was apparently characteristic of the man.

There are numerous South Carolina physicians who are more qualified to write their remembrances of Dr. Waring than the present editor of *The Journal.* I offer one for reasons which he would have appreciated. Shortly before his death, he empathized: "The problem with being editor of *The Journal* was having to meet that deadline every month."

As a freshman medical student in Baltimore, I first heard of Dr. Waring's reputation as a medical historian from an impeccable source: Dr. Owsei Temkin, the acknowledged dean of American medical historians. I had approached Dr. Temkin about the possibility of a summer research project. Upon learning that I came from South Carolina, he immediately began telling me about Joe Waring, the Charleston pediatrician who had made significant contributions to the field, and who was also much remembered by

American medical historians for the hospitality which he had shown them at Old Town Plantation. It was to be years later before I had the opportunity to meet Dr. Waring and to compliment him on his writings. Typically, he referred to them as "mere cataloging". One knew otherwise.

When Dr. Edward E. Kimbrough resigned as editor, effective January 1977, he was made editor emeritus and Dr. Waring's name was deleted from our masthead. *The Journal* and the South Carolina Medical Association evidently meant a great deal to him, for Dr. Waring wrote us a charming letter in which he politely wondered how one could be "de-merited" from an "emeritus" position. The Council quickly created for him a new position, that of *senior* editor emeritus, and he was back on our masthead. The role of medical history in *The Journal* was of mutual concern. On the one hand, there was a long tradition of historical articles, including many of Dr. Waring's, and I was personally interested in this tradition and had been made a member of the Committee on Historical Medicine. On the other hand, our readership survey indicated a low priority for such articles. We corresponded, and he kindly invited me to visit him at the Waring Historical Library.

That visit, two months before his death, was most memorable. One can only envy his life-long friends, who surely treasure many such memories. He began by expressing concern as to where I had managed to park my car on the busy Medical University campus. Upon learning that I had indeed left the vehicle in a place of doubtful legality, Dr. Waring and his assistant, Mrs. Anne Donato, prepared a special placard for the windshield to the effect that I was a guest of the Waring Historical Library. Feeling extremely secure, I then joined Dr. Waring at his desk.

At 80 years of age, he seemed active and alert. His desk seemed, at first glance, to be in a cluttered state of disarray. However, closer inspection disclosed all of the hallmarks of the busy, disciplined scholar: the scattered piles of books and journals possessed an order, and the numerous placemarks indicated that a project was well underway. Dr. Waring explained that he was compiling a bibliography of medical history in South Carolina. Thus, it was clear that he continued to place emphasis on preparing the way for others.

He gave a tour through the library with obvious pleasure. He radiated pride in the collections, although he spoke of the need for additional funding. We browsed through some rare books. Dr. Waring was far from pedantic, and displayed a sense of humor which made one feel at ease immediately. We paused for a few moments over William Hunter's illustrations of the gravid uterus, made two centuries ago. The previous evening, I had gone over Temkin's essay, "The usefulness of medical history for medicine." I reflected silently upon how the clinically relevant portion of the detail which Hunter had drawn from cadavers could now be obtained non-invasively in the living patient by diagnostic ultrasound, a method introduced since Dr. Waring retired from clinical practice. But the users of newer technology can only be enriched by learning of the problems of their predecessors. The value of such a place on a medical school campus is great, if often intangible.

Dr. Waring was kind enough to invite me to lunch at Old Town Plantation, site of the original English settlement on the west bank of the Ashley River. The settlers of 1670 had left the site after several years for another location, known then as Oyster Point and now as Charleston. The land had for many years been in the family of his wife, Ferdinanda Legaré Waring. The Warings had recently sold this tract of immense historical value to the state, with the stipulation that they would remain there the balance of their lives. The exhibition center known as Charles Towne Landing occupies a portion of the tract.

The Warings' old white frame house stood in a setting of spectacular beauty. In front of the house was a tranquil pond, presided over by a majestic American egret perched in a moss-draped live oak tree. The extensive grounds were immaculate, and behind the house stood an avenue of widely-spaced oaks. One sensed immediately that this was one of those rare, special places to be found in the lowcountry which was created long ago under a different labor system, and could not be created again.

It was therefore with great surprise that I learned, as many others had doubtlessly learned before me, that all of the landscaping had been carried out within recent memory, under the supervision of Mrs. Waring. The gardens, the pond, and the live oak avenue were all of her creation. Dr. Waring laughed: "When we planted those trees, we didn't think we'd live long enough to appreciate them."

The Warings were charming and open. Mrs. Waring expressed her continued concerns about the grounds, even though the upkeep was now done by state employees. Dr. Waring talked about fishing and about weekends at Wadmalaw Island, where his circle of friends met regularly each Saturday morning to share gossip. He recalled how the fear had been expressed by younger pediatricians, after World War II, that their entering practice might be resented, and how he had quickly dispelled such fears. The sauce which they served with dessert bore the eponym of a departed friend. This led to a brief discussion of the desirability of avoiding a lingering illness.

Since Dr. Waring's death, I have had the opportunity to listen to the recollections of several of his contemporaries. Dr. William Weston, Jr., remembers his contributions to pediatrics and their shared vacations at Highlands, in the mountains. Dr. O. B. Mayer remembers the exceptional dedication which he gave to the South Carolina Medical Association. Former patients remember him as a kindly doctor who made shots seem painless; former colleagues remember him as a conservative physician who preached early that penicillin was not a panacea and that tonsillectomies were being done too frequently. Dr. George C. Rogers, Jr., Professor of History at the University of South Carolina, remembers Dr. Waring for the many kindnesses and encouragements given him early in his career. He expressed the sentiment that Dr. Waring may well have been "the last of a breed — the 'talented amateur' who goes on to become a major authority." History, like medicine, is becoming increasingly specialized.

Any serious future historian of medicine in South Carolina must take as the departure point the contributions of Dr. Waring. These contributions become even more remarkable when one considers that his productivity peaked relatively late in life. He demonstrated the need for a systematic approach to medical history, and we can be grateful for the creation of the Waring Historical Library and, more recently, of the Waring Library Society. One hopes that funds might somehow be made available for an endowed chair at the Medical University — a Joseph Ioor Waring Professorship of the History of Medicine. ☐

— CSB

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CORONARY ARTERIOGRAPHY AND CORONARY ARTERY SURGERY — CROSSROADS OR NOT?

The area of coronary arteriography and coronary artery surgery continues to be one of controversy and disagreement. The evolutionary process of 18 years of coronary arteriography and 10 years of aorto-coronary venous bypass grafting has resulted in a number of solid factual areas with clear cut answers and other areas which are not yet answered. However, I believe the latter now have been grasped securely and that meaningful information will be available within the next three years.

Coronary arteriography and ventriculography have been developed to the point where they are performed competently in widespread geographical areas, carry very low mortality and morbidity, and yield a tremendous amount of useful information. I believe their risk is at the level where the indication is basically "will it help in the management of my patient."

Diagnostic coronary arteriograms are indicated in patients who are physically, emotionally, and financially crippled with chest pain and a satisfactory answer to all parties cannot be obtained otherwise. This group makes up about 20% of the patients undergoing coronary arteriograms in most laboratories. The risk in such patients is quite small; I am able to find only one death in the literature in a patient undergoing coronary arteriography for diagnostic purposes in whom no heart disease was found. Coronary arteriography should also be performed in all patients over age 40 undergoing study for valvular and congenital heart disease and if chest pain is a complaint they should have coronary arteriography at any age. I believe that asymptomatic coronary stenosis of 50% diameter or greater should be bypassed at the time of surgery in such patients.

Patients with known ischemic heart disease should be studied if they fall into one of the following groups; chronic angina uncontrolled by medical therapy, unstable angina, post-infarctional angina, 2mm or greater ST depression in the first six minutes of the Bruce Protocol treadmill test, less than 40 years of age, or if the patient suffers a catastrophic complication of acute myocardial infarction such as a ruptured chordae tendinea, papillary muscle, or interventricular septum or cardiogenic shock unresponsive to diastolic augmentation. There have been recent reports indicating patients have a poorer prognosis after subendocardial infarction than after a transmural infarction. This has led to enthusiasm in some quarters for study of all such patients, in some cases within the acute period. I do not believe sufficient data is available to justify such a course as yet and that the high risk patients can be identified by a treadmill exercise test six weeks post-infarctional. In the proper clinical setting, it appears reasonable to bypass stenosis of 50% or greater diameter but to consider patients with widespread diffuse distal disease with poor run off or a left ventricular ejection fraction of less than 30% as inoperable.

There seems little dispute that chronic angina unresponsive to medical therapy is an indication for coronary artery bypass grafting. Most studies indicate that 90% of patients have a significant reduction in angina and that 70% of patients have total relief of angina for a period of time of a sufficient duration to justify surgery by a team that can operate with a mortality less than 4%, have a perioperative infarction rate of less than 10%, and have a total graft patency rate of 80% and a patient patency rate of 90%.

Controversy surrounds the question of whether life can be prolonged by bypass grafting in patients with ischemic heart disease. This question seems clearly answered in the situation of a left main coronary artery stenosis of 50% diameter or greater; surgery decreases the yearly mortality by approximately 50% and seems clearly indicated regardless of the pathological anatomy otherwise.[1] Adequate data remains lacking but there is a large body with which I am in agreement who feel that a left anterior descending lesion jeopardizing a large segment of the LV and which has no significant collaterals should be bypassed if "single vessel" surgery is available which can operate on such a lesion with a mortality rate of 1%, perioperative infarction rate of 4%, and a graft patency rate of 90%.[2] This would be an LAD lesion at or proximal to the first septal branch.

The question of decreasing mortality and morbidity in other groups has suffered from the lack of randomized studies in the past. Surgical results of the 1970's have usually used medical results of the 1960's as the standard for comparison of medical versus surgical survival. These comparisons ignored the possibility that medical therapy had improved and clearly it has. Annual mortality for ischemic heart disease in those non-operated groups was 6-7%, whereas today it is about 4%.[3] The mortality from triple vessel disease has been reduced by 50% in some medically treated groups. The number of deaths in the United States from myocardial infarction decreased 20% from 1968 to 1975. A number of things are obvious which probably are having an impact; public education, coronary care units, excellent anti-hypertensive agents, after load reduction and diastolic augmentation as well as coronary bypass. The widespread use of B-adrenergic blockers are felt by many to be making a major impact and a growing number of physicians are now using them routinely in patients with ischemic heart disease rather than just to control angina or arrhythmias. One study from England using Practolol in a double-blind control trial in post infarction patients demonstrated a major reduction in cardiac events, sudden death, and myocardial infarction in the treated group.[4] The Medical University of South Carolina, Division of Cardiology, is a participant in a national multicenter study beginning in the United States to study Propranolol in a similar fashion.

A preliminary report on a randomized study to determine the effect of bypass grafting on survival in patients with chronic ischemic heart disease has recently been published.[5] It is ironical that both antagonist and protagonist of surgery therapy appear to be using the data to support their positions. It is being used by many as a drunk uses a lamp post; for support and not illumination. This report dealt with a three-year follow-up and showed 87% survival with medical treatment and 88% survival with surgical treatment, which to me speaks extremely well for both forms of therapy. It should be noted that left main coronary lesions and patients with significantly reduced LV function were excluded from the study. The surgical mortality of 5.6% and the graft patency rate of 69% are not acceptable today but there is no way to have a long term prospective study except by using what was available technically at the time of entrance. One of the most interesting features is that at 30 months, the surgical survival met and crossed the medical group and at 36 months was 1% better. Does this mean that at three more years surgical survival will be 7% better than medical?

Unstable angina pectoris has undergone somewhat of an evolution as far as its management is concerned. A national cooperative study in a number of major medical centers sponsored by the NHLBI and performed in a randomized fashion has indicated equal mortality at 24 months, slightly more infarctions in the surgical group, and a distinct improvement in angina in the surgical group.[3] This supports the view that many hold that the indications for bypass grafting in unstable angina is the relief of pain and not to prevent an infarct or death. The incidence of perioperative infarct is much less if a patient is stabilized and treated medically for a period of time rather than having study and surgery immediately upon admission as an emergency procedure. A common practice which I agree with is to admit all such patients to a Coronary Care Unit, treat intensively with a medical regimen including Propranolol and if spontaneous pain at rest persists, to study in 24-48 hours and if not to study in 7-10 days. I feel they all should be studied as there has been a change and the anatomy should be defined.

The evolutionary process in this field continues. We are very close to the point where all patients with or suspected of having ischemic heart disease will be undergoing coronary arteriography regardless of the choice of treatment. Surgical therapy has been shown to reduce suffering and in certain situations to prolong life. Only time will tell if it should be applied more widely. The financial implications are immense; approximately 70,000 bypass operations were performed in the United States in 1977 at a cost of approximately $10,000.00 each. No hard and fast rules can apply to a physician and an individual patient. Decisions must be made on the basis of such information as is available in the literature, the competence of the "cath team" and the competence of the surgeons who will operate on a particular patient in a particular hospital.

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President's Page

AMA SURVEY TEAM REPORT

It is well known that sometimes it is advisable to have someone from the outside look at an organization to effectively appraise and give recommendations. This is the reason the SCMA asked for a Survey Team from the American Medical Association to conduct a survey of certain aspects of South Carolina Medical Association operations. The specific areas of our survey were:

1. *The Committee structure of the Association,*
2. *The Association's Constitution and By-Laws,*
3. *Reorganization of the SCMA and its subsidiary organizations, and*
4. *Staffing structures of the SCMA and its subsidiaries.*

The report of the Survey Team is now in hand, and Council of the Association and its appropriate committees are digesting the findings and recommendations. After due consideration, we are hopeful the resulting actions will be forthcoming to make the SCMA a more efficient and effective organization working for the physicians of South Carolina.

1978 LEGISLATIVE YEAR

Le me also remind you that the legislative year is in full swing, and the efforts of every physician in the state are needed to help our people at the legislature obtain passage of legislation that we favor and to prevent passage of legislation that we oppose. Contact and work with your legislator to sell our point of view. A legislator is most interested in what his local physicians have to say.

And finally, get involved in the upcoming elections and support the friends of the individual physician and organized medicine. Early in the campaign is the most effective time to make your point.

Waitus O. Tanner, M.D.
President

AUXILIARY PRESIDENT'S PAGE

Karin LaBruce reports to us this
month on the Health Careers Fair.
Elise Cain, President

1978 HEALTH CAREERS FAIR

Once again, the South Carolina Medical Association Auxiliary is presenting THE HEALTH CAREERS FAIR at the Gaillard Municipal Auditorium in Charleston. Our eighth fair is being held on Wednesday and Thursday, February 15th and 16th from 10:00 a.m. until 3:00 p.m.

Since its inception, well over 15,000 junior and senior high school students from at least 70 schools in 22 counties across the state have visited the fair. In addition, approximately 600 of the most seriously interested students each year have the opportunity of taking a tour of The Medical University and viewing the departments in depth.

Health occupations are growing and changing with advancements in technology, and the demand is great for qualified people. Our aim is to introduce the many health fields available to the young people of South Carolina. Approximately thirty allied health fields requiring skill levels ranging from high school education to graduate study are represented at the fair in the form of actual demonstrations, students and faculty. Counselors are also on hand to give additional guidance.

From the AMA, we are displaying two outstanding exhibits that tour the country — "LIFE BEGINS," containing twelve fetuses embedded in plastic, showing development from four weeks to full term, and "transparent twins," two 5′7″ transparent female models, one showing twenty-five organs of the body and the other the 200-bone skeleton and nervous system with a tape recorded message describing the functions.

This is the last year the fair is being held on an annual basis. In the future THE HEALTH CAREERS FAIR will be held bi-annually with the next fair being held in 1980. We appreciate very much the women of your medical community arranging transportation for all interested youth to attend this year's event as there will not be another opportunity for two years.

Mrs. Arthur M. LaBruce (Karin)
Health Careers Chairman, Charleston

PHYSICIAN RECRUITMENT/PLACEMENT

The following physicians are actively seeking practice appointments in South Carolina:

RADIOLOGY — Age, 47. Graduated Univ. of Tennessee, Memphis, Tenn., 1958. Residency, Erlanger Hospital, Chattanooga, Tenn., 7/73-7/76. Licensed in four states. Board eligible. Currently in practice situation. Prefers solo, partnership or multi-specialty group type practice in small to medium-sized community near the coast. First year income open. Available immediately.

INTERNAL MEDICINE, ENDOCRINOLOGY — Age, 31. Graduated Univ. of Pittsburgh, Pa., 1973. Residency, Univ. of Alabama, Med. Center Hospital, Birmingham, Alabama, 1974-1976; Presbyterian Hospital, Pittsburgh, Pa. 1976 to present (Endocrinology). Licensed in Ala. and Pa. Board certified, Internal Medicine. Board eligible, Endocrinology. Seeks multi-specialty, single specialty or partnership practice in large metropolitan area of state. Minimum first year income $40,000. Available July, 1978.

OPHTHALMOLOGY — Graduated Temple Univ., Phila., Pa., 1965. Residency, W. Virginia Univ. Hosp., Morgantown, Pa., 7/74-6/77. Licensed in 4 states. Board certified, Anesthesiology. Board eligible, Ophthalmology, 1/78. Member of AMA. Seeks single-specialty, group practice or partnership in large metropolitan area near the coast. First year income open. Available immediately.

OBSTETRICS & GYNECOLOGY — Age, 47. Graduated Case Western Reserve, Cleveland, Ohio, 1956. Residency, Methodist Hospital, Indianapolis, Ind., 7/57-6/60. Licensed in Calif., Ohio, Indiana and Mass. Board certified, OB/GYN. U. S. Navy, 7/60-6/62. Seeks single or multi-specialty group, or solo type of practice in upstate or midlands area of the state in small community. Three months notice for availability.

SURGERY, GENERAL, ABDOMINAL, COLON & RECTAL — Age, 42. Washington School of Medicine, St. Louis, Missouri, 1958. Residency, U. S. Naval Hospital, Philadelphia, Pa., 7/64-7/68. Licensed in Florida & Missouri. Board certified. Currently in practice situation. Seeks partnership, single-specialty group or solo practice in large metropolitan area. Available, November, 1978.

UROLOGY — Age, 30. Graduated Univ. of Miss., Jackson, Miss., 1973. Residency, Univ. of Miss., 7/74-6/78. Licensed in Mississippi. Passed FLEX. Board eligible. Seeks partnership, single or multi-specialty group in large metropolitan area of the state. Available 7/78.

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SCMA ANNUAL MEETING

The one hundred thirtieth Annual Meeting of the South Carolina Medical Association will be held April 28-30, 1978, at the Myrtle Beach Hilton, Myrtle Beach, South Carolina. A record attendance is expected for this annual event, according to Speaker of the House, William H. Hunter, M.D.

The House of Delegates will meet on Friday, and again on Sunday, to conduct the business of the Association. Reference Committee meetings are scheduled for Friday afternoon. Other events of interest include the Annual Banquet on Saturday evening, the SOCPAC luncheon on Saturday, at which Congressman Floyd Spence will be the speaker, and the MUSC Alumni Luncheon on Friday.

The 1978 Scientific Session is customarily held on Saturday morning. Joseph C. Ross, M.D., Chairman of the SCMA Scientific Program Committee, advises that plans are underway to firm up the scientific program, with lectures tentatively scheduled which will be of interest to and will update practicing physicians in the state on a wide variety of subjects.

Other organizations meeting during the same weekend, in conjunction with the SCMA meeting, include the S. C. Society of Pediatrics, the S. C. Society of Pathologists, the S. C. Dermatological Society, and the S. C. Society of Radiologists.

Local medical societies are urged to notify the SCMA offices of their elected delegates to the House for the 1978 session, in order to facilitate pre-registration and advance mailings. All Reports and Resolutions to be printed in the *Journal* must be received in the *Journal* office no later than March 1, 1978.

For advance registration, please complete the form appearing below and mail it to the South Carolina Medical Association offices.

S. C. MEDICAL ASSOCIATION ANNUAL MEETING REGISTRATION
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ERRATUM

The following errors appeared in the article, "Should clinically diagnosed Down Syndrome be confirmed by cytogenetic study?", in the December 1977 issue of *The Journal:*
(1) On page 530, paragraph two, "A 21/21 translocation can also lead to Down Syndrome" *should read:* "A 21/22 translocation. . . ."
(2) Figures 2 and 3 should be reversed (page 531). The legend for "Figure 2" applies to the illustration in "Figure 3," and vice versa.

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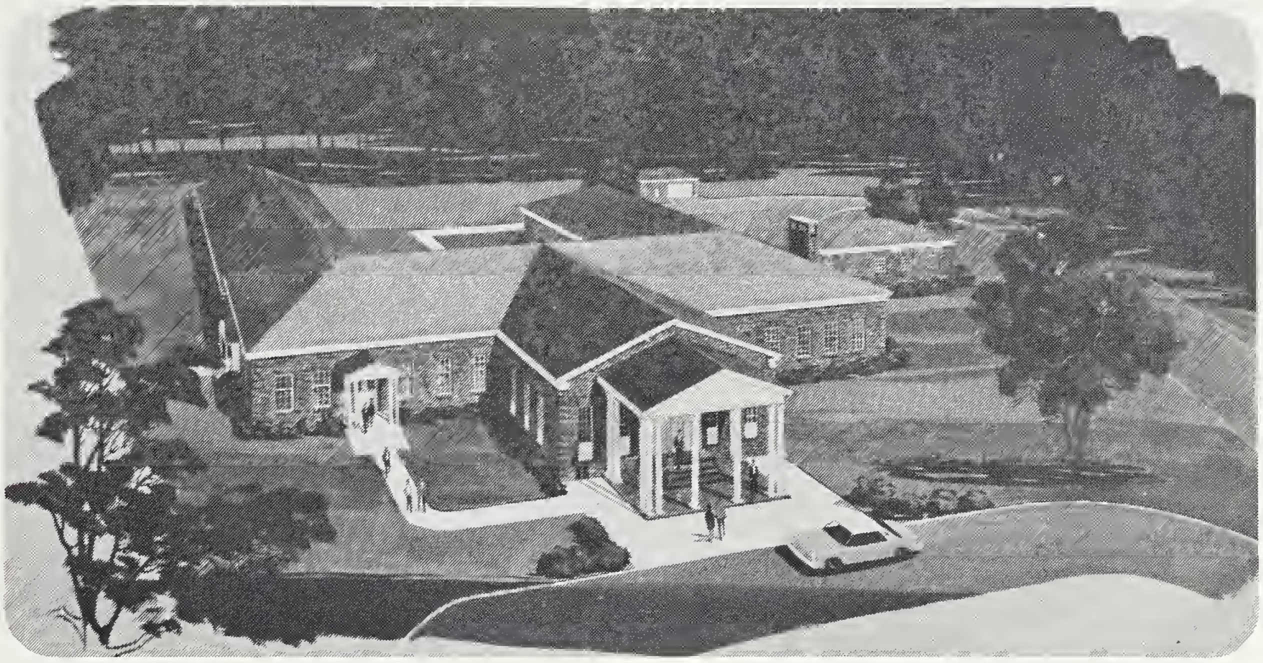

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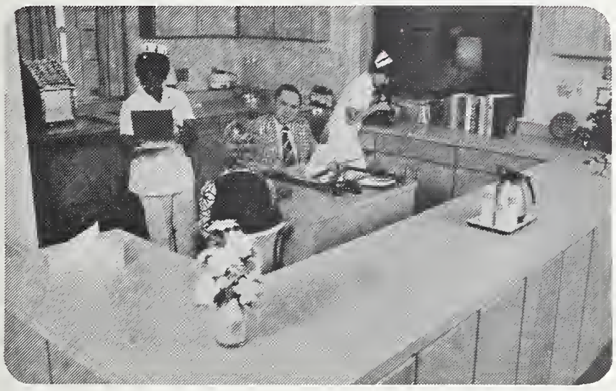

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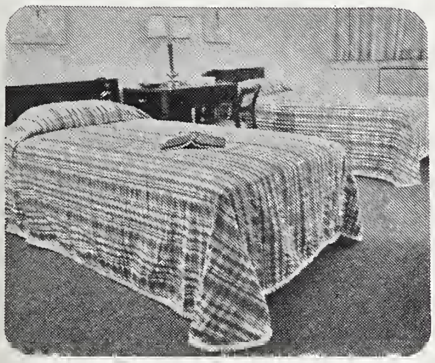

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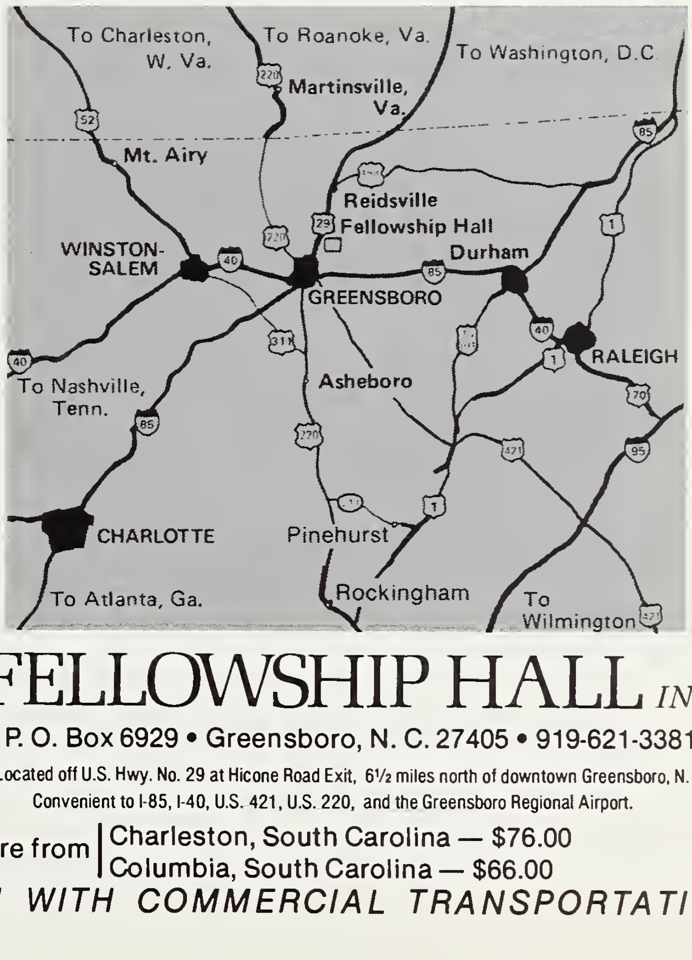

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Caroli Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Maili address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C

The views expressed in this publication are those of the writers and do not necessarily reflect the opinic of the South Carolina Medical Association.

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THE JOURNAL
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VOLUME 74 MARCH 1978 NUMBER 3

INTERMITTENT POSITIVE PRESSURE BREATHING OR CHEST PHYSICAL THERAPY?

JOSEPH S. REDDING, M.D., F.A.C.P.*
CALVERT C. ALPERT, M.D.**

An innovation in the treatment of patients with respiratory disease was the introduction of Intermittent Positive Pressure Breathing (IPPB) treatments in 1947.[1] Since that time this modality has achieved widespread popularity, unfortunately with a marked lack of uniformity of indications for ordering IPPB as well as a wide range of expected results.[2]

One situation in which IPPB treatments have commonly been employed is in the prevention and treatment of atelectasis. Numerous studies[3, 4, 5, 6, 7] failed to satisfactorily demonstrate that the use of IPPB treatments in the preoperative and postoperative periods influence the incidence of pulmonary complications. This trend to discredit IPPB for the stated purpose recently culminated in such publications as the one entitled "Stop IPPB Therapy!"[8] With their faith in an extensively used treatment modality shaken, many physicians have been puzzled as to what might be a more effective approach to the management of atelectasis.

Chest Physical Therapy (CPT) techniques were originated at the Brompton Hospital in 1934.[9] Although subsequently developed, modified and utilized by British physiotherapists and anaesthetists for many years, this type of treatment has not been widely known or used in this country until recently.

In January 1974 the Department of Anesthesiology of the Medical University of South Carolina established a Section on Respiratory Care which was to function in a consultant and educational capacity in the care of patients from all services with critical cardiorespiratory disorders due to disease, trauma or surgical intervention. Simultaneously a movement to expand the capabilities of the Respiratory Therapy personnel to provide all modern Respiratory Therapy services on a round-the-clock basis was undertaken. An intensive effort to educate the medical staff of the hospital in the limitations of IPPB therapy and the effectiveness of CPT resulted in the trends shown in Figure 1. Initially CPT was administered by the single faculty member of the section on Respiratory Care assisted by the nurses of the Intensive Care units. With expansion of the Respiratory Care staff and the capabilities of the Respiratory Therapy personnel the number of CPT treatments given by Respiratory Therapy increased from 0 in the summer of 1974 to 4700 in the winter of 1977, while the number of IPPB treatments administered decreased from 9176 to 2020 over the same time interval.

CPT TECHNIQUES

Huffing is a prolonged powerful expiratory effort with open vocal cords. It should be carried out by the patient without an actual cough, and is intended to carry secretions toward the carina from which point they can be removed by coughing or tracheal suction.

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Percussion, also called tapotement, consists of rhythmic clapping on the thorax. The therapist's hands are held in a cup-shaped position to avoid bruising the patient. Percussion should not be applied directly to the bare skin, but always with a towel or folded sheet between the skin and the therapist's hands. Percussion alone is insufficient to clear secretions from the patient's lungs. The therapist must exercise judgment regarding the force to be used during this maneuver. Rib fractures may result from excessive violence.

Vibration consists of rapid rhythmic compressions of the thorax while the patient exhales. Vibration is alternated with percussion and huffing to help the patient move stagnated secretions toward the trachea.

Postural Drainage consists of placing the patient in such a position that gravity aids movement of secretions toward the hilum. The portion of the bronchial tree where secretions are sequestered is positioned so that the bronchus from that region is directed as nearly vertically downward as possible. The 10 positions utilized for the various pulmonary lobes and segments are shown in Figure 2. Postural drainage for the upper lobes is less often needed than for the lower lobes since the upper lobes drain when the patient is in the sitting position.

Effective treatment depends upon a combination of percussion, vibration, and huffing with the patient properly positioned for postural drainage. Use of a single maneuver alone will not adequately mobilize the patient's secretions. Vibration may be used without percussion in patients who cannot be positioned for, or tolerate, effective percussion. The head down position is often poorly tolerated, or even dangerous, for the severely dyspneic or hypoxemic patient unless ventilatory support is provided by means of assisted ventilation with inspiratory positive pressure with supplementary oxygen. Depending upon the severity of the patient's condition, treatment must be interrupted at intervals to permit the patient to rest and breathe deeply with positive pressure assistance. Huffing must always be preceded by a deep inspiration, assisted if necessary with positive pressure oxygen. While coughing may be encouraged to raise the secretions, it is necessary to avoid paroxysms of coughing in the critically hypoxic patient, since this may result in exhaustion, syncope, or even worsening hypoxia with circulatory arrest.

ILLUSTRATIVE CASE

A 23 year old male was admitted to the hospital after sustaining a closed head injury in a motorcycle accident. He was obtunded and exhibited

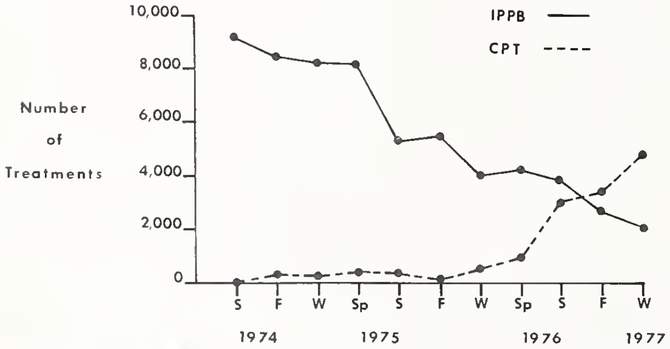

FIGURE 1: Number of Intermittent Positive Pressure Breathing (IPPB) and Chest Physical Therapy (CPT) treatments given by Respiratory Therapy personnel at Medical University Hospital from Summer 1974 through Winter 1977. S = Summer, F = Fall, Sp = Spring, W = Winter.

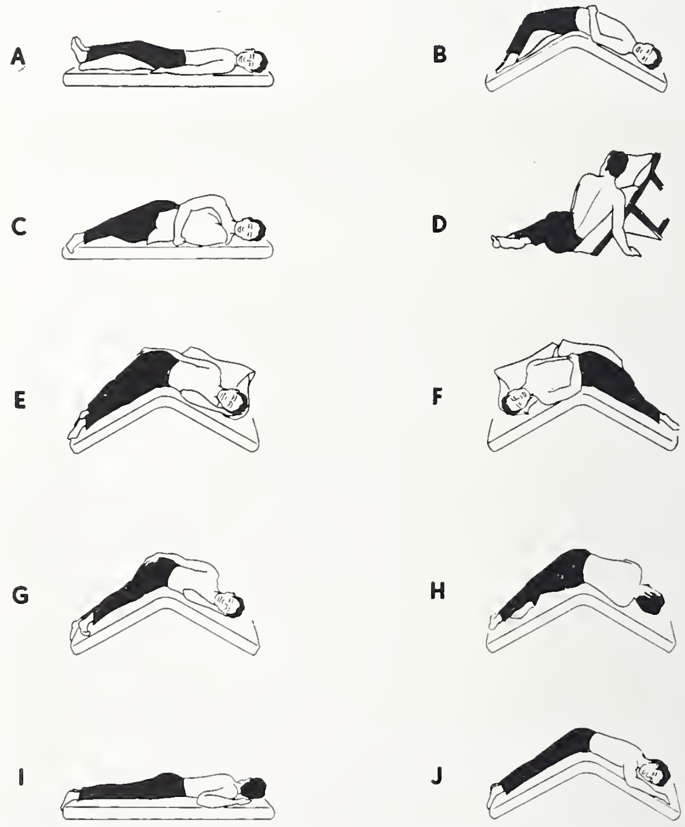

FIGURE 2: Positions used in postural drainage of the pulmonary lobes and segments. A = Upper Lobes — Anterior Segments, B = Lower Lobes — Anterior Segments, C = Right Upper Lobe, D = Left Upper Lobe, E = Right Middle Lobe, F = Left Lingular, G = Right Lower Lobe-Lateral Segment, H = Left Lower Lobe-Lateral Segment, I = Lower Lobes-Apical Segments, J = Lower Lobes-Posterior Segments.

extensor posturing. A hematoma of the left forehead and orbit and a fracture of the left arm were noted. His trachea was intubated with difficulty; blood was observed in the pharynx and suctioned from the trachea. Respirations were rapid and shallow and diffuse rales were heard throughout both lung fields. He was placed on mechanical ventilation because pulmonary edema was suspected.

The day after admission chest roentgenograms showed increased vascularity of both lungs consistent with interstitial pulmonary edema. He was treated with steroids and mannitol.

During the late afternoon on the second day after admission, he began to trigger the ventilator at a rate of 60 breaths/minute. Breath sounds were absent over the entire left lung with decreased resonance to percussion. Arterial blood gas analysis on an inhaled oxygen concentration of 50% revealed pH 7.43, PCO_2 35 mm Hg, PO_2 27 mm Hg. Another arterial sample after increasing the inhaled oxygen concentration to 100% and applying 5 cm H_2O positive end-expiratory pressure showed pH 7.43, PCO_2 31 mm Hg, PO_2 45 mm Hg. At this time a chest roentgenogram taken at the time of drawing the first blood sample was inspected (Fig. 3). There was uniform hazy consolidation of the entire left lung with marked elevation of the left hemidiaphragm.

The patient was positioned on his right side in the head down position. Vigorous percussion and vibration were applied to the left hemithorax. Tracheal suction recovered copious blood-tinged mucous secretions. After approximately 15 minutes of treatment, auscultation and percussion of the left lung were normal. An arterial blood sample drawn while he was still receiving 100% oxygen showed pH 7.40, PCO_2 37 mm Hg, PO_2 415 mm Hg. A repeat chest roentgenogram (Fig. 4) after treatment showed the left lung to be entirely clear while the left hemi-diaphragm was discretely outlined and in normal position.

Subsequent management of his pulmonary problems was successful, his fractured elbow was reduced, his sensorium cleared and he was weaned from the ventilator and decannulated uneventfully on the 12th hospital day. Chest roentgenogram and arterial blood gas analysis at that time were normal.

DISCUSSION

Intermittent inspiratory positive airway pressure is the principle utilized in mechanical venti-

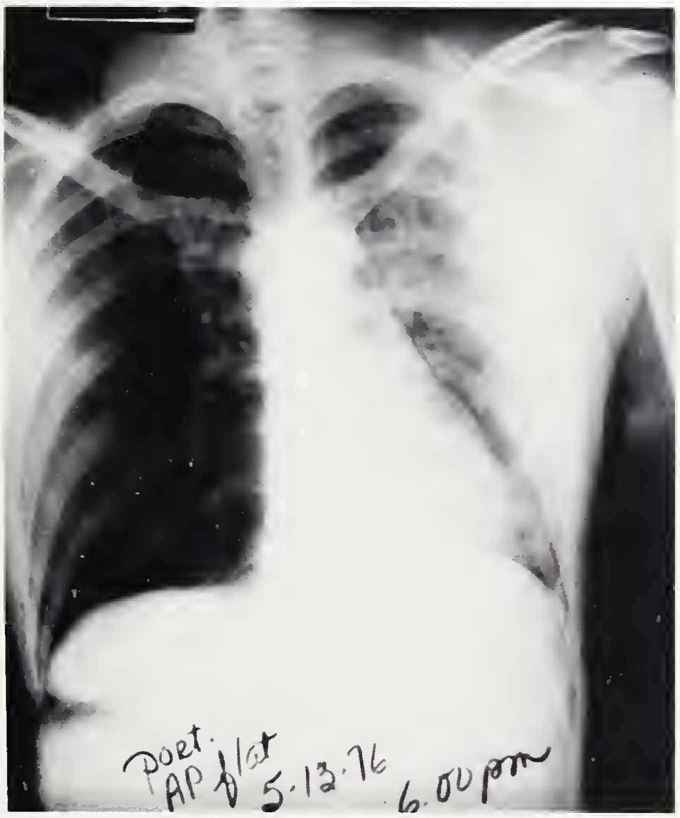

FIGURE 3: Chest roentgenogram of a patient with atelectasis of the left lung. Note elevated left hemidiaphragm and hazy consolidation of the entire left lung field. Arterial PO_2 45 mm Hg while he was being ventilated with 100% oxygen.

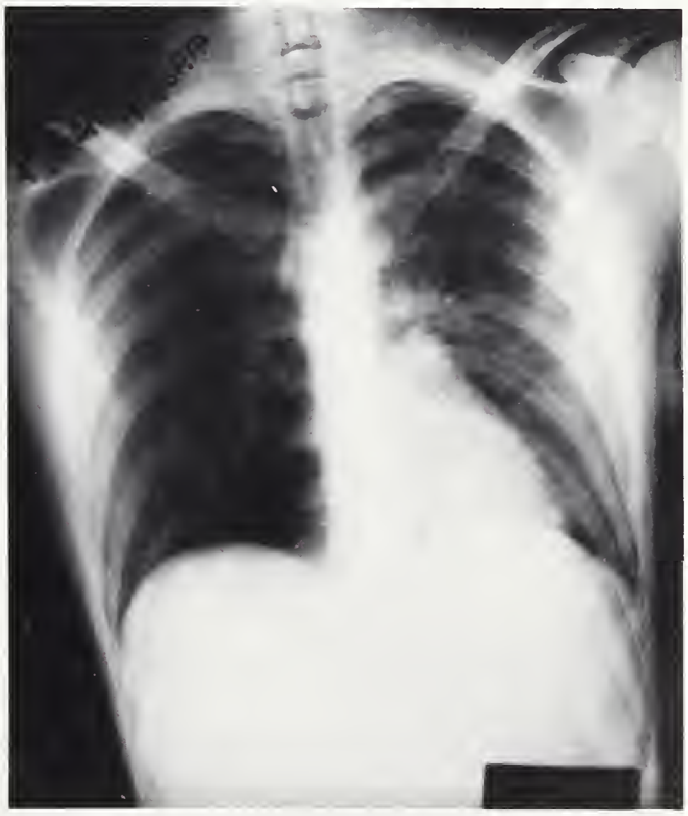

FIGURE 4: Chest roentgenogram of the same patient after a single Chest Physical Therapy treatment. Note normal position of left hemidiaphragm and clear left lung field. Arterial PO_2 415 mm Hg while he was being ventilated with 100% oxygen.

lation of patients who are unable to ventilate themselves because of paralysis, trauma or other causes. While the criteria for instituting and withdrawing this form of treatment vary, there is universal agreement regarding the necessity for, and effectiveness of, this modality in those patients who require it. Unfortunately the designation IPPB has been applied to this form of treatment. Far more often IPPB refers to episodic application of inspiratory positive airway pressure several times daily for periods of about 15 minutes. In this circumstance not only the airway pressure is intermittent, the therapy itself is intermittent. It is the value of the latter application of IPPB about which the controversy has developed. The confusing terminology has aggravated a confusing debate.

Much of the disillusionment with IPPB treatments has been related to failure to prevent or correct atelectasis. In the postoperative period following laparotomy or thoracotomy, involutary splinting of the accessory muscles of respiration due to pain in the incision site reduces the patient's ability to sigh and cough effectively. Without intermittent deep breaths (sighs) several times each hour, constant tidal volume ventilation results in small airway closure with development of ventilation/perfusion mismatching (microatelectasis). Ineffective coughing leads to inspissation of mucous plugs with obstruction of larger airways and absorption of air distal to the obstruction (macroatelectasis). Either condition results in hypoxemia. Since sighing normally occurs several times each hour, it is not logical to expect a 15 minute treatment applied three or four times daily to be an adequate substitute.

Similarly, if alveolar collapse results from secretions obstructing the lower airway, it is unreasonable to expect IPPB to force the collapsed alveoli open. The pressure registered on the manometer of the IPPB device is delivered to the patient's upper airway. By the time the gas reaches the alveolar level, flow resistance has reduced the pressure increase to a minimal level, and that gas which reaches the alveoli follows the path of least resistance to those areas which are already expanded and therefore compliant.

We are not prepared to join Dr. Gold[8] in his mandate to "Stop IPPB Therapy!" As Yanda[10] points out "the scientific studies which have attacked the efficacy of IPPB fail to take into account the acute needs of a dyspneic and frantic patient and of an equally anxious nurse and attending physician." He lists the psychological benefits of IPPB as being:

1) The placebo effect of doing something.
2) The talisman effect of an impressive machine.
3) The "impress the relatives with how much we are doing for the patient" effect.
4) The therapeutic experience of investing money.
5) The aversion therapy of experiencing a possibly unpleasant treatment with a subsequent reluctance to complain.

Nor are we implying that the response to CPT is always as prompt and dramatic as that presented in our Illustrative Case. Often frequent repetition of the treatment is necessary and the therapist must be persistent. The best results are obtained from treatment rendered as soon as possible after recognition of the development of atelectasis. Delayed treatment allows time for changes in surfactant activity and makes reexpansion of the affected area of lung difficult. With altered surfactant, alveolar collapse often recurs in the same location, requiring repeated treatments.

In summary, the physician must be aware of the advantages and limitations of the available forms of treatment and must employ those modalities best calculated to achieve his therapeutic objectives. ☐

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INTESTINAL PARASITES IN SOUTH CAROLINA — A THREE YEAR STUDY*

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INTRODUCTION

The occurrence of intestinal parasites in the population of South Carolina is not a new problem. The extent of parasitism has received considerable attention over the last fifteen years. A relatively small study[1] in 1963 suggested that as many as 63% of the participants in the study were infected with *Ascaris lumbricoides (A. lumbricoides).* Thirty-seven percent had *Trichuris trichiura (T. trichiura)* and nearly 4% had hookworm. A somewhat smaller sample[2] from the same coastal area of the state, performed in 1969, generally confirmed the findings of the earlier study reporting 73.3% of the children in the study infected with helminths. In 1970, a study of 884 children from the midstate area demonstrated *A. lumbricoides* in nearly 22% of the subjects.[3] The undesirable effects of intestinal parasitism are widely known and parasitism has been listed as one of the major causes of malnutrition in South Carolina.[4]

Until 1970, there was little material in the literature defining the areas of the state at greatest risk for various specific parasites. At that time a study dealing with the geographical distribution of parasites, especially *A. lumbricoides* was undertaken by DiSalvo and Melonas.[5] In that study of over 26,000 stool specimens from all counties of the state, 13% contained ova of *A. lumbricoides*, 3% contained hookworm ova and 2% contained ova of *T. trichiura*. Less than 1% of the specimens examined contained pathogenic protozoa. The geographical incidence of *A. lumbricoides* was determined by county for those areas with more than 10% of their submitted specimens positive. It was found that these conditions were most often found in the counties southeast of a line formed by (but not including) Aiken, Lexington, Richland, Kershaw, and Chesterfield counties. Since that time efforts have been made by several federal, state, and private agencies to reduce the incidence of parasitic disease in the state.

It was the purpose of this study to evaluate data from over 60,000 stool specimens to determine which pathogenic intestinal parasites were present in the state, where they were most commonly found and what changes, if any, had occurred in the incidence of parasitic infection. This study was based on voluntarily submitted specimens and, therefore, cannot be taken as an absolutely accurate estimate of the incidence of any parasite in the state. In addition, this evaluation did not include those intestinal parasites not generally considered pathogenic.

MATERIALS AND METHODS

Stool specimens were submitted to the Parasitology Section, Division of Diagnostic Microbiology by mail or courier in one ounce ointment tins. Specimens were submitted from county health clinics, school surveys, private physicians and custodial institutions in all areas of the state. On arrival in the laboratory, specimens were either examined the same day or stored at 4°C until processed. Parasites, ova, or cysts were concentrated by the formalin-ether technique.[6] This method recovers all groups of protozoan cysts, helminth ova, and helminths, if present, but does not permit the detection of protozoan trophozoites. Due to the time involved in shipping these specimens, it was unlikely that trophozoites would survive intact.

A total of 63,978 specimens were examined between July, 1974, and June, 1977. A submission rate was determined for each county by calculating the number of specimens submitted during the period of the study per 1,000 population (1975 population estimate). This was necessary if comparisons between counties were to be made, since even adjoining counties in South Carolina are often greatly different in population.

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Generally, the greater the number of specimens submitted per thousand population, the more reliable the results. The percentage of specimens which contained *A. lumbricoides*, hookworm, *T. trichiura*, *Giardia lamblia (G. lamblia)*, and *Entamoeba histolytica (E. histolytica)* were calculated for each county.

RESULTS

The results of this study are summarized in Table I. Of the 63,978 stool specimens examined, 5.8% were found to contain ova of *A. lumbricoides*, 2.1% were found to contain ova of *T. trichiura*, and 0.4% contained hookworm ova. *G. lamblia* cysts were found in 4.4% of the specimens and *E. histolytica* cysts in 0.4%. In addition to the parasites listed in Table I, *Strongyloides stercoralis* was detected in 47 specimens and 21 tapeworm infections were identified. These parasites were never present in 0.5% of the specimens from any individual county so they were not included in Table I. The number of specimens submitted per thousand population varied from a low of 3.7 specimens per thousand to a high of 68.7 submissions per thousand population. The average number of submissions was approximately 22.7 specimens per thousand population. Figure 1 illustrates the areas of the state at greatest risk for A. *lumbricoides.* Geographically, the situation is the same as in 1969, with the addition of certain counties and great reductions in prevalence in other counties.

Figure 2 illustrates the areas of the state with *T. trichiura* ova in 4% or more of the specimens submitted from those counties. This level of infection was found in only three counties, all along the Atlantic coast.

Hookworm *(Necator americanus* and *Ancylostoma duodenale* collectively) ova (Figure 2) were found in more than 1% of the specimens from six counties scattered over the state.

Giardia lamblia (Figure 3) was found in 4% or more of the stool specimens examined from twenty-three counties in South Carolina. There was no predeliction for any area of the state, but counties with large numbers of specimens positive for this parasite generally tended to be on either the border of North Carolina or Georgia.

Entamoeba histolytica (Figure 4) was detected in 0.4% of the stools studied. Thirty-one counties submitted stool specimens containing the cysts of this parasite.

DISCUSSION

The results of this study illustrated that infection with intestinal parasites remained a serious problem in South Carolina. However, comparison of the data obtained in this study with that of previous studies, especially that of DiSalvo and Melonas, suggested that, in the case of some parasites significant reductions in incidence had been achieved.

Stool specimens containing *A. lumbricoides* ova were received from every county in the state. In 1969, there were nineteen counties with greater than 10% of the specimens yielding *Ascaris lumbricoides* ova. For the period of the present study, there were only 5. Of these, however, two (Bamberg and Berkeley) had less than 10% positive in 1969. Allendale and Jasper counties had more than 10% positive for *A. lumbricoides* in 1969, but in the present study less than 5% of the specimens submitted contained ova of this parasite. The problem has been reduced in the other counties previously found to have more than 10% of the specimens submitted positive for ova of *A. lumbricoides*.

Trichuris trichiura ova were found in 2.1% of the specimens examined during this study. In 1969, 2% of the specimens contained ova of this parasite. Therefore, the percentage positive remained essentially unchanged. Beaufort and Charleston counties were the only counties with more than 4% of the submitted specimens positive in 1969, but in the present study, Georgetown county also had more than 4% positive for this parasite (2% in 1969). *Trichuris trichiura* is an occasional finding in all areas of the state with 32 counties submitting specimens positive for the ova of this parasite.

Hookworm infections in South Carolina have apparently been drastically reduced. Only 0.4% of the specimens submitted had ova compared with 3% in 1969. In 1969, twenty-five counties submitted stools with 1% or more containing hookworm ova. In the present study, only six counties submitted specimens with greater than 1% containing hookworm ova.

The protozoan parasites were seldom noted in the study by DiSalvo and Melonas. Although comparisons of the data obtained in these two studies is very useful, it should be noted that the techniques used for concentrating parasites from fecal material was not the same in both studies. The formalin-ether concentration technique used in the present study was considered to be more effective than the zinc sulfate floatation method used in the study of DiSalvo and Melonas. This difference could account for some of the variation in the number of protozoans recovered and may explain some of the increase noted with this group of parasites. In addition, the specimens used in the study of DiSalvo and Melonas came, to a great extent, from surveys of school children. Such was not the case in the present study in which most of the specimens were submitted by county health departments and private physicians. In the present study, significant numbers of two pathogenic protozoa were detected. *Giardia lamblia* cysts were found in greater than 4% of the stools submitted from 23 counties. This protozoan has apparently gained a significant foothold in the state over the last few years. This followed a national trend and the reasons for the increase were not fully understood.

Entamoeba histolytica was rarely found in 1969. In the present study, cysts of *E. histolytica* were detected in 0.4% of the stools examined. With this level of incidence, the problem is of the same magnitude as hookworm. Only 5 counties had more than 0.5% of submitted stools positive for this parasite, but even these relatively low levels indicate a potential problem when compared with the data available in 1969. The high incidence in Richland and Kershaw counties was almost entirely due to large numbers of positive specimens submitted from custodial facilities and does not reflect the incidence in the general population.

It would appear that South Carolina continues to have a problem with intestinal parasites. However, the level of parasite infection, especially the level of helminth infection has been reduced since the statewide study of 1969. A recent article[7] has reported that 21% of the specimens submitted to the Bureau of Laboratories were positive for parasites. This statement is true, but the percentage, as reported, contained large numbers of non-pathogenic protozoan parasites of questionable medical importance. In fact, for the period considered in the present study, less than 13% of the specimens submitted contained pathogenic parasitic organisms. This compares with a maximum of 17.7% in 1969. There has possibly been a shift in the type of pathogenic parasite occurring in South Carolina. In 1969, the helminths, *A. lumbricoides*, *T. trichiura*, and the hookworms were present in a maximum of 17.6% of the stools examined. In the present study, they were found in a maximum of 8.3%, a reduction of at least 9.3%. However, during 1969, less than 1% of the submitted specimens contained pathogenic protozoa, while during the period of the present study, a maximum of 4.7% contained pathogenic protozoa. Since all of the parasitic organisms under consideration were spread as a result of poor hygienic habits, it is unlikely that one group, such as the protozoans would actually be seen with increasing frequency while another group (the helminths) would be seen less often. The apparent increase in protozoa may be real, especially the increased numbers of *Giardia lamblia* that were noted, but continued study will be needed to confirm this trend. It would appear that the incidence of parasitic disease in South Carolina has been significantly reduced from the levels of 1969. □

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Table I

PARASITES DETECTED FROM JULY, 1974 TO JUNE, 1977

County	NUMBERS OF PARASITES DETECTED					Specimens Submitted Per 1,000 Population	Total Specimens
	Ascaris lumbricoides	Hookworm	Trichuris trichiura	Giardia lamblia	Entamoeba histolytica		
Abbeville	3	0	0	7	0	17.9	387
Aiken	34	1	0	42	1	10.7	1,014
Allendale	10	0	0	7	0	23.3	236
Anderson	15	0	1	65	3	11.4	1,322
Bamberg	127	8	1	45	7	51.0	842
Barnwell	19	7	1	19	3	17.0	327
Beaufort	74	1	88	61	7	17.8	946
Berkeley	99	4	8	31	2	14.1	910
Calhoun	46	0	3	12	0	60.7	680
Charleston	900	18	837	342	19	37.1	9,767
Cherokee	4	0	1	16	0	7.3	296
Chester	27	0	0	35	3	26.9	814
Chesterfield	46	12	1	61	2	39.6	1,363
Clarendon	149	11	8	48	2	52.5	1,371
Colleton	136	16	0	34	1	35.9	1,029
Darlington	94	19	8	60	0	27.1	1,522
Dillon	89	16	1	51	1	49.5	1,466
Dorchester	112	12	9	54	1	28.2	1,249
Edgefield	12	0	0	14	1	20.9	336
Fairfield	15	0	1	31	1	43.8	881
Florence	318	19	4	167	5	48.3	4,709
Georgetown	145	9	51	53	0	33.8	1,277
Greenville	9	0	10	112	3	9.5	2,537
Greenwood	6	0	0	19	0	11.7	611
Hampton	46	0	3	41	0	34.3	587
Horry	155	23	15	83	0	21.1	1,799
Jasper	24	0	4	24	1	42.8	553
Kershaw	17	3	1	37	38	33.0	1,193
Lancaster	12	0	0	32	1	10.5	481
Laurens	8	0	1	31	0	16.4	833
Lee	35	0	0	14	0	30.0	504
Lexington	18	12	2	37	0	7.6	910
Marion	52	1	1	14	0	68.7	543
Marlboro	71	5	17	44	2	29.0	937
McCormick	1	0	4	2	0	9.6	272
Newberry	4	0	0	12	0	12.9	396
Oconee	11	2	0	45	1	11.9	522
Orangeburg	188	7	9	76	5	29.8	2,280
Pickens	22	1	0	62	1	14.1	969
Richland	185	61	127	340	102	39.4	9,900
Saluda	19	0	0	17	1	34.4	492
Spartanburg	10	0	3	39	6	3.7	715
Sumter	239	8	14	103	3	33.4	2,756
Union	1	0	0	8	1	4.0	121
Williamsburg	106	8	5	30	2	33.9	1,165
York	4	0	2	40	1	7.7	717
Totals	3,713	285	1,321	2,787	227		63,978

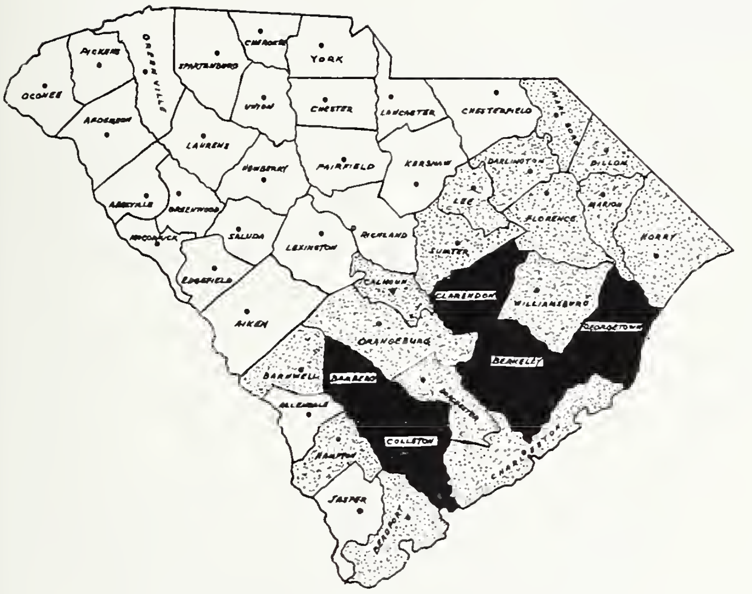

FIGURE 1. Incidence of *Ascaris lumbricoides* in South Carolina

▒ 5.0 to 9.9 specimens positive per 100 submitted.

■ 10 or more specimens positive per 100 submitted.

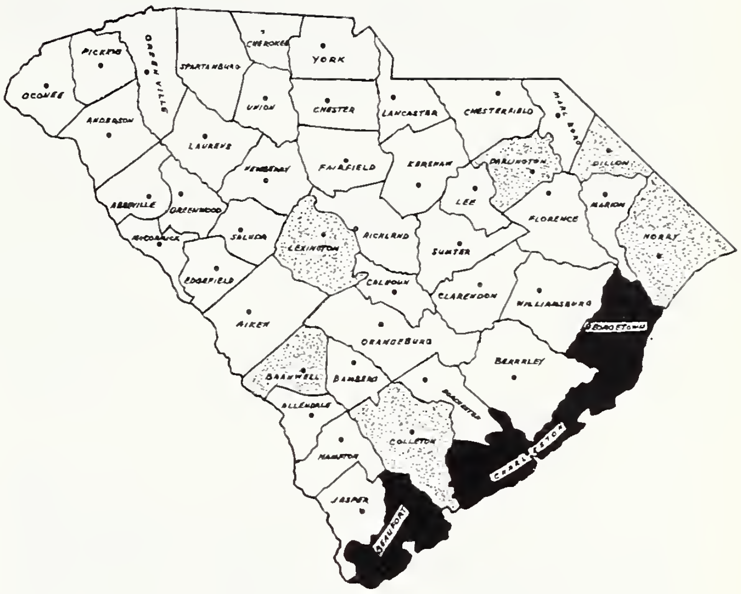

FIGURE 2. Incidence of *Trichuris trichiura* and hookworm in South Carolina.

■ 4 or more specimens positive per 100 submitted for *T. trichiura* ova.

▒ 1 or more specimens positive per 100 submitted for hookworm ova.

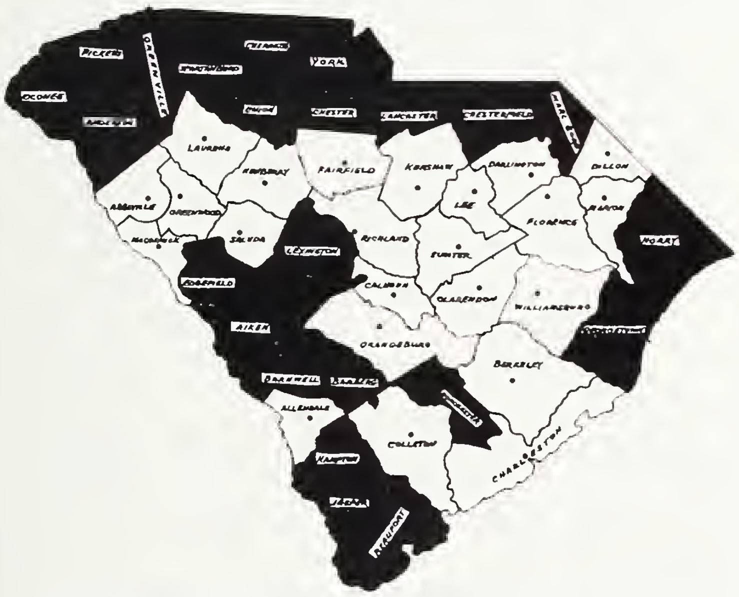

FIGURE 3. Incidence of *Giardia lamblia* in South Carolina.

■ 4 or more specimens positive per 100 submitted.

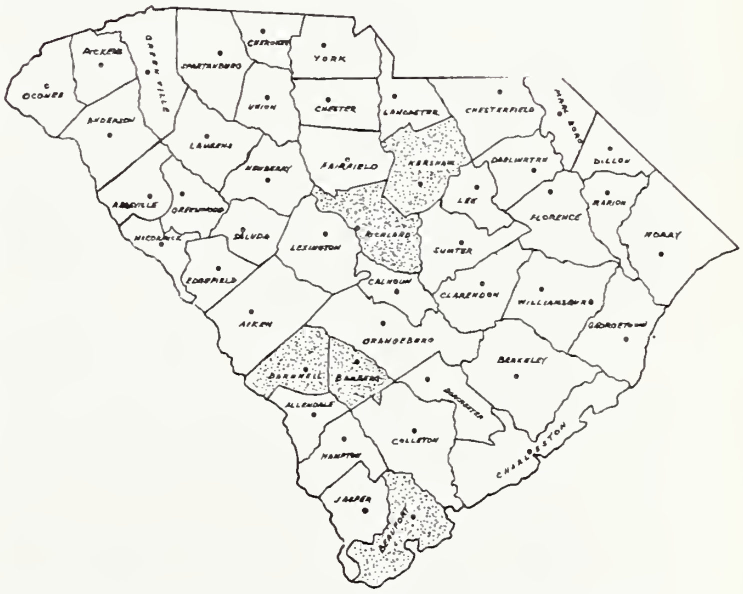

FIGURE 4. Incidence of *Entamoeba histolytica* in South Carolina

▒ 0.5 specimens positive per 100 submitted.

COMPUTER COMMUNICATIONS IN RURAL PRACTICE

J. GAVIN APPLEBY, M.D.*
MARK L. BRAUNSTEIN, M.D.**

The rural family physician practicing either alone or in a small group commonly provides the bulk of health care to his practice. His patients are often widely dispersed across a large geographic area and frequently contain a large proportion of people from the lower socio-economic groups. The rural physician is frequently located near a small hospital but must often refer the more seriously ill patient to relatively distant specialists and specialty facilities.

The daily patient load in a rural practice can be substantially above that customarily seen in more populated areas, where the ratio of physicians to patients is usually higher. This higher patient volume has necessitated the introduction of para-professionals such as the Medex and the nurse practitioner into many rural practices.

All of these considerations suggest that the rural physician has a substantial need for improved communications in his practice. Specifically communications can take place:

A) *Between the physician and the patient* — the patient requires instruction and health education. Both functions can be time-consuming and to the extent that public health programs and other publically funded educational programs are relatively infrequent in the rural area the burden for this education falls increasingly upon the rural physician.

B) *Between the physician and his office staff* — we have already discussed the increasing role of para-professionals in the rural practice. Clearly effective and efficient communications between these professionals and physicians is critical to the success of this health team in rural practice.

C) *Between the physician and referral physicians* — the need for referral to remote practitioners and facilities is obviously increased in the isolated rural area. Consultation between the rural physician and these consultants is a very desirable aid to the rural practitioner. Improved visual communications offers the promise of consultations without the necessity for transporting the patient back and forth when the situation does not require the use of specialized facilities.

D) *Among the rural physician peer group* — the need for professional review and for professional reinforcement depends upon the ability of these practitioners to communicate their practice experience to each other and/or to some constituted review body.

For several years the Department of Family Practice at the Medical University of South Carolina has recognized a responsibility to seek solutions for these communications problems so as to increase the effectiveness of family practitioners who choose a rural setting for their practice.[1, 2] Moreover, the department has hoped that by making rural practice more attractive increased numbers of family practice residents would choose a rural setting for their practices. A rural practice in St. George was selected by the department as a test site for this system. In this capacity the practice has utilized the computer for the storage of basic health data on patients and we have been able to utilize this data in support of our delivery of care in rural Dorchester County, South Carolina.

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To understand the usefulness of computerized medical records in Family Practice, let us discuss a topic of practical and contemporary significance. Vaccination against influenza has been shown to significantly reduce both patient morbidity and patient mortality from the more serious complications of influenza. However, vaccination of the entire population is both costly and administratively difficult. It is known that certain groups of patients — those over 65 and those patients of any age with certain chronic debilitating diseases — are at the greatest risk of serious and life-threatening complications from influenza.

In the traditional practice the physician must trust in his own memory and in the statements made by public health officials to insure that his patients at greatest risk are notified and receive influenza vaccinations.

In our practice several key pieces of data are computerized and are readily accessible. For example we have been able to select patients who are either over 66 or who have diabetes or emphysema. These patients were selected by the computer based upon stored data and can now be contacted for influenza vaccinations.

Obviously this capability has great importance for organizing other health programs. Patients with hypertension can be selected and encouraged to attend special education classes in their disease. Females in their early teens may be notified of family planning classes and so forth.

These data have application beyond the physician's management of his practice in these specific circumstances. The demographic composition of a patient population contains factors such as age/sex and income distribution which can be important in health planning.

SOME PRACTICAL APPLICATIONS

1) *Drug Interactions* — One interesting aspect of the computer and its usage in a rural practice, has been the ability to monitor drug interactions. The computer stores the body of knowledge of drug interactions from one of the standard texts.[4] As additional drugs are prescribed to patients, it compares new drugs to any other drugs a patient may be taking. All possible interactions are reported out by the computer. The vast majority of these interactions have been of an extremely minor and nonconsequential nature. However, such interactions can be serious.

We observed one very interesting case involving a drug interaction problem during this time. An elderly diabetic female had considerable difficulty with anxiety and had been placed on Sparine. She also had rather severe periodic headaches and was given a prescription for Demerol tablets to be used only when absolutely necessary. Not too long afterwards she began developing episodes of syncope with total loss of consciousness. She was hospitalized once and placed on the Holter monitor for some days thinking that it may be some cardiac arrhythmia. She had a complete neurological workup including electroencephalograms to rule out some form of seizure pattern. On one of her routine visits to the office to check for her diabetes, the rewritten prescription for Sparine went through the computer. It kicked back out a statement that a combination of Sparine with Demerol sometimes causes shock and even death. In lieu of this possibility her Sparine was changed to a different tranquilizer and she ceased to have the episodes of syncope.

2) *Patient Follow-Up* — The computer provides a summary sheet after each visit of the patient. This summary is inserted in the front left hand side of the patient's clinical chart, providing a synopsis of the overall situation. This form affords the physician a quick and accurate overview of the patient's past permanent problems, perhaps the temporary problems though this has largely been deleted, all allergies including drug allergies, and a list of medications that the patient may be using.

In this practice, the two most useful items on the summary sheet have been the review of permanent problems and the medications lists.

The list of permanent problems affords a quick medical past history of the patient, and returns to the physician's mind those problems of a major nature which have not been resolved or need additional followup. In a busy Family Practice it is quite easy to let a disease which has no symptoms slide into the background and rock along for years unchecked and occasionally untreated such as a case with conditions such as hyperlipidemia, and pre-diabetes. The summary sheet acts as a reminder to recheck these conditions. This improves the delivery of health care.

3) *Patient Compliance* — Medications for chronically ill patients have always been a problem. By reading off the list to the patient or asking the patient which medications she or he is taking at the present, a much more accurate situation develops between the patient, their medications, and their illnesses. Duplications and unnecessary medications are much more readily identifiable and quite often you can save the patient some money by discarding some medications.

4) *Preventive Care* — A more practical use for the search capability of the computer lies in the field of preventive medicine. Prospective medicine requires the monitoring of certain particular laboratory tests, etc. of the patient. An example of this situation is a simple case of hypertension. The computer can tell you whether the patient is participating in adequate followup. The importance of this is well known. These search lists can be rapidly assembled to find that portion of the population which needs immunizations. Much more accurate contact of a useful nature with the patient can be developed and prospective and preventive medicine can be improved considerably by the use of these systems.

SUMMARY

The computer, then, when it contains important basic clinical and demographic data, has an important role in the communications problems of primary care. Certainly the systems which we are using now in our practice are far from ideal but they are equally far removed from the types of systems which we were using previously. ☐

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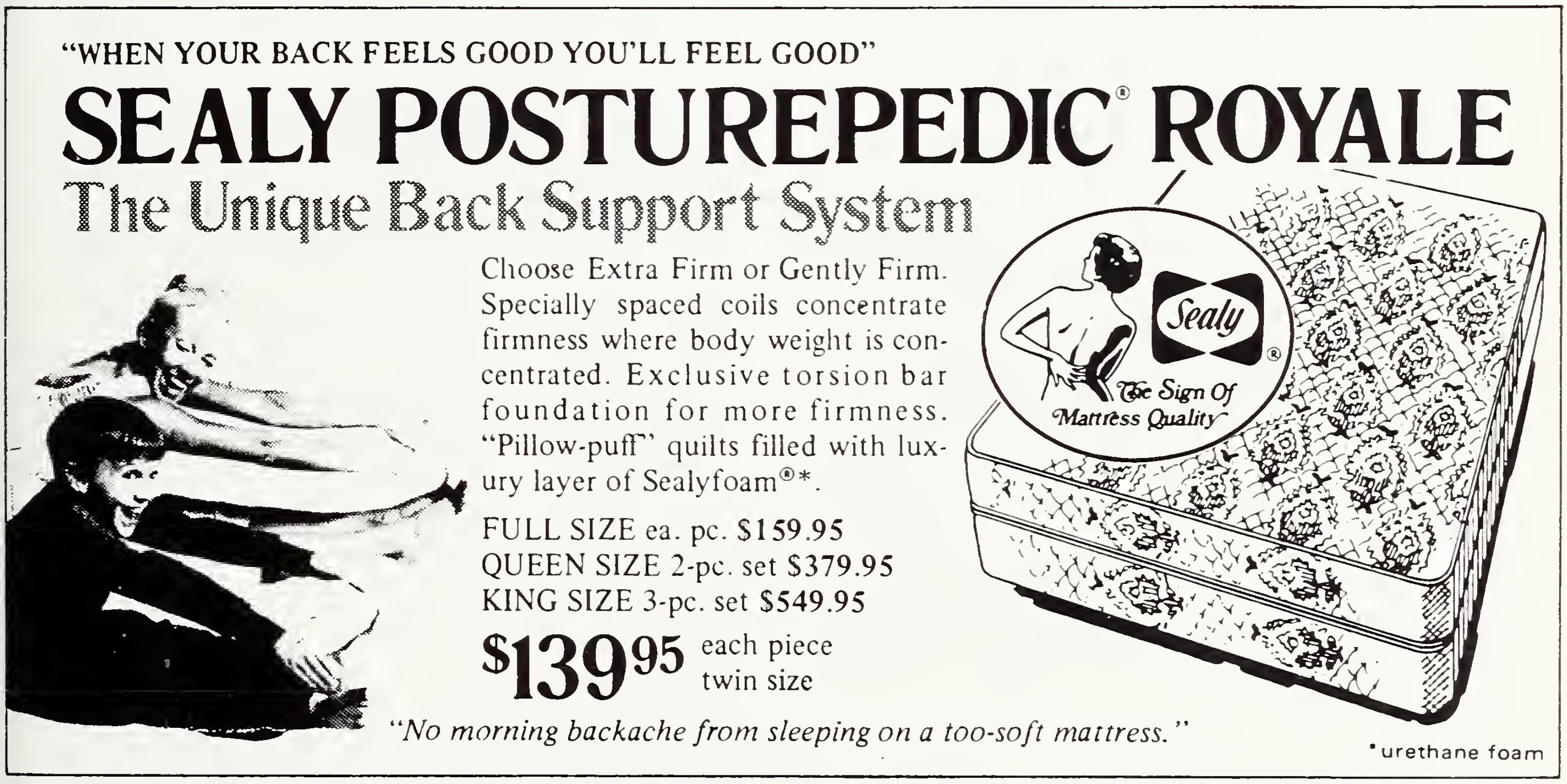

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LABORATORIES IN THE OFFICES OF PRIVATE PHYSICIANS IN SOUTH CAROLINA: RESULTS OF A SURVEY

STEWART CLARE, M.D.*

A survey of members of the South Carolina Medical Association was done by the Laboratory Quality Committee of the South Carolina Medical Association, to determine how much laboratory work is being done in the offices of doctors in the state. The results of this survey are presented in this report.

A single-sheet questionnaire with a cover letter was mailed to all members of S.C.M.A. in January of 1975. Questions were included to find out:

1. How many doctors in South Carolina do office laboratory testing;
2. Which tests are done;
3. If the percentage of doctors doing laboratory testing in their offices were correlated with the availability of an independent laboratory;
4. If the number of doctors practicing together were correlated with the amount of laboratory testing done in their offices.

Approximately 2,000 questionnaires were mailed. It was requested that only one questionnaire be returned from groups practicing together in one office, in partnership, or otherwise associated. One thousand and six (1,006) forms from 1798 physicians were filled out and returned to us.

RESULTS

Many doctors indicated that few tests are being done in their offices, frequently just urinalyses and hemoglobin or hematocrit. If urinalysis and hemoglobin or hematocrit are done in an office, with no blood chemistries, they are described in this report as doing "limited laboratory work."

Seventy-one percent (71%) of South Carolina's physicians seeing private patients do laboratory testing in their offices. Of these, 46% do a variety of tests, including blood chemistries. When data from General Practice/Family Practice, Internal Medicine, and General Surgery are grouped, 92% do some laboratory work.

General Practice/Family Practice do more office laboratory testing than any other specialty. Three hundred twenty-four (324) forms from 477 physicians were received and tabulated. Two percent (2%) do no office laboratory tests; 23% do limited laboratory work; 75% do a variety of tests, including blood chemistries. Of the tests done, 95% do urinalyses, 87% do hemoglobins and 43% do complete blood counts. Blood sugars are done by 68%, blood urea nitrogen by 31%, uric acid by 34%, cholesterol by 40%, and bilirubin by 17%. Other tests done include prothrombin times (29%), pregnancy tests (53%), infectious mononucleosis tests (39%), and bacteriology (30%).

The percentages for internists are similar to those for Family Practice/General Practice. Other specialties do fewer tests, with the tests done being those related to their particular specialties.

In determining if availability of a private laboratory were correlated with the percentage of physicians doing office laboratory work, the forms from General Practice/Family Practice were used. Communities having private laboratories were identified by a list of Medicare Approved independent laboratories. When the form did not indicate the name of the community in which the respondent practiced, only that the practice was in a "city," then it was assumed that a private independent laboratory was available. It was assumed that no private independent laboratory was available when the practice was in a "town." Forms with no indication of the location of the practice could not be used for correlations with availability with other laboratories in the community.

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Forms from one hundred sixty-seven (167) physicians having an independent laboratory available, and forms from 286 physicians with no private laboratory available were tabulated. In communities having an independent laboratory available, 9% do no laboratory work, 28% do limited laboratory work, and 63% do multiple tests. In communities with no independent laboratory, 1% do no laboratory work, 27% do limited laboratory work and 72% do multiple tests.

The number of physicians practicing together in groups or partnerships appears to have very little correlation with the amount of laboratory work done. Data from General Practice/Family Practice, Internal Medicine, Pediatrics, Obstetrics and Gynecology, and Surgery were compiled togeher. This comprised 666 forms from 1,171 physicians. Of those practicing by themselves (solo), 15% do no tests, 36% do limited testing, and 49% do multiple tests in their offices. When practicing together in groups of 4, 20% do no tests, 30% do limited testing, and 50% do multiple tests in their offices. Other group sizes do similar amounts of laboratory testing in their offices.

COMMENTS

Convenience to patients and doctors, economy, and prompt results have been cited as important reasons for doctors doing office laboratory testing.[1]

Laboratory testing is done in many physicians' offices in South Carolina. Grouping General Practice/Family Practice, Internal Medicine, and General Surgery provides data that may be compared with a recent national survey[1] and a survey done in neighboring Georgia.[2] Ninety-two percent (92%) of this group of physicians in South Carolina do office laboratory testing, 82% in the nation, and 82% in Georgia.

Slight differences in the percentages of doctors doing office laboratory work between partnerships of different numbers and the differences between physicians in areas with and without private laboratories available may be statistically significant, but these differences are small and unimportant.

This survey did not attempt to determine the quality of methods or equipment used, qualifications of persons performing the tests, or quality control methods being used to assure quality performance. These topics were tabulated in the recent national survey.[1] The Laboratory Quality Committee will continue to encourage the voluntary subscription to Proficiency Testing Services, and the use of other quality control techniques. ☐

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THE CHANGING STATUS OF RABIES IN SOUTH CAROLINA

ARTHUR F. DiSALVO, M.D.*
RICHARD L. PARKER, D.V.M., M.P.H.**
HAROLD DOWDA, Ph.D.*

In 1977 the first rabid dog (and the first rabid domestic animal) in South Carolina since 1963 was identified. In January 1978 a rabid cat was also found. The first rabid fox in South Carolina since 1961 was reported in 1975.

The decision to initiate prophylaxis against rabies becomes extremely difficult when the possibility of exposure cannot be determined with certainty. When the circumstances indicate that exposure to rabies virus has occurred, the physician is obligated to initiate a course of treatment. If the biting animal is available for laboratory study, the course may be continued or abandoned, based on the outcome of that examination.

If the biting animal is not available for testing, two major factors must be considered before proceeding: The risk of an allergic reaction to the post exposure immunization; and the probability that the biting animal transmitted rabies virus. Thus the institution of treatment is based on the balanced perspective of risk of reaction and patient discomfort versus the possibility of exposure to rabies.

The duck embryo derived rabies vaccine presently available from the South Carolina Department of Health and Environmental Control (DHEC) is much safer than the previously supplied Semple nervous tissue vaccine, but it is not totally without hazards.[1, 2] Human beings have been successfully protected from developing rabies with a new vaccine produced in tissue cultures derived from human diploid cells apparently with minimal reactions. This vaccine, however, is not now commercially produced.[3] For passive immunization, Human Rabies Immune Globulin (HRIG) is now readily available in the United States and does not have the sensitizing potential of horse serum.[4] At $150 per average treatment, HRIG is expensive and is now supplied by DHEC.

Knowing the risks of the treatment, the decision to administer vaccine and immune globulin is based on the probability that the biting animal may have been rabid. Some considerations on which this judgment is based are: the clinical status of the animal at the time of the bite; vaccination history; local prevalence of rabies and the species of biting animal.[5] The first two factors may not be known if the biting animal escapes. However, the circumstances of the bite may reflect the clinical status of the biting animal. If the bite was provoked, such as in teasing a domestic animal or feeding a wild animal, the bite may be considered normal behavior for that animal. Typically, the dog head submitted to the Bureau of Laboratories for examination was a neighborhood pet, which was hit by a car and the victim was bitten while trying to aid the pet. The situation would be considered a provoked bite.

The third and fourth factors to be evaluated in weighing the possibility of rabies in the biting animal are the prevalence of rabies in the community and the animal species involved.

Rabies is not endemic in rodents in the United States. There has never been a case of human rabies attributed to the bite of any rodent (squirrel, gerbil, mouse, rat, etc.) in the United States despite the fact that 24,000 persons are bitten by rodents annually in this country.[6]

The confirmed cases of rabies in South Carolina for the past decade are shown in the Table. These cases reflect a dramatic change in South Carolina's rabies situation since the last report from this Agency.[7] From 1968 through 1970 no evidence of rabies infection in wild or domestic animals was found although 400-600 brains were being examined annually. From 1963 to 1972, the only rabid species found were bats.

It is not surprising to find the rabid bats. Since the first rabies-positive bat was identified in Florida in 1953, the incidence of bat rabies has escalated nationally until the present time when bats are second only to skunks as the leading animal with rabies infection in the United States. In South Carolina, the first rabid bat was identified in 1963 and one or two rabid bats were found each year from 1963 to 1967.

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* Bureau of Laboratories

** Bureau of Epidemiology, S. C Department of Health and Environmental Control, 2600 Bull Street, Columbia, S. C. 29201

Rabies in raccoons was first described in Florida in 1947 and each year the migration of rabid raccoons has been steadily northward entering Georgia in 1962 and into the southern corner of South Carolina in 1972.

In 1977, 18 raccoons, 16 bats, one fox and one dog in South Carolina were found to be rabid. The raccoons, the fox and the dog all came from the southern counties of the State (Beaufort, Jasper, Hampton, Allendale, and Colleton Counties). In addition, a rabid cat (the first since 1959) was identified from Beaufort County in January 1978. The first two cases of rabies in domestic animals from South Carolina since 1963 occurred in the area where raccoon rabies is known to be endemic.

The current status of the prevalence of rabies, by species, in South Carolina should serve as a guide to be applied to individual circumstances regarding animal bites. Methods for submitting animal heads for examination are outlined in "Services of the Bureau of Laboratories" which was distributed to South Carolina physicians in April 1976. Consultations regarding the laboratory testing may be obtained from the Bureau of Laboratories (758-8030). Consultations regarding therapy and availability of vaccine and rabies immune globulin may be obtained from the Bureau of Epidemiology (758-7970). □

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THE A. M. A. INTERIM MEETING*

HARRISON L. PEEPLES M.D.**

Your delegation to the Interim Meeting of the AMA House of Delegates in Chicago was welcomed by very hostile weather conditions — zero degrees with a minus 40 chill factor — on arrival December 3, 1977. Accommodations in the convention city Palmer House Hotel were quite appropriate for a large meeting and quite satisfactory for our general comfort. Attending this meeting were Dr. Waitus O. Tanner, our President, and wife, Jennie; Dr. Dessie Gilland, our immediate past president, and alternate delegate-elect to the AMA; Dr. John Hawk, our senior delegate and president-elect of the South Carolina Medical Association; Dr. Tucker Weston, our alternate delegate, and wife Polly; Dr. Ray Gillespie, our alternate delegate; Lib and I.

This Interim Meeting was different from the usual in that the clinical meeting was not held in conjunction with the House of Delegates. These scientific meetings are now being held on regional basis throughout the country. Our full time was devoted to the affairs of the House. The House acted on 103 reports and 86 resolutions.

During our stay in Chicago, most of the delegation visited the AMA headquarters at 535 North Dearborn Street and made a tour of the entire facilities. I would heartily recommend that anyone visiting Chicago at any time do likewise. We were very much impressed by what we saw and the expertise that we encountered as we were informed of the array of services that are offered to the membership. There is a large research library located in this building that is readily available for your services simply by the asking. To give you an idea what is available to you, I would recommend that you write for two publications that outline the services — (1) *Quick Guide to AMA Serivces* (2) *Listing of AMA Publications.* These may be obtained by writing: Order Department, AMA, 535 North Dearborn Street, Chicago, Ill. 60610. The AMA is your organization; its services are available to you.

Your delegates, as instructed, were involved in three resolutions that were considered by the House of Delegates. The first was opposing direct Medicare payments for physician extenders without direct supervision of the physician and was referred to the Council on Medical Services which offered a substitute resolution in lieu of the resolution as stated by South Carolina. This substitute resolution was passed as follows:

> "RESOLVED that the American Medical Association reaffirm its opposition to any legislation or program which would provide for Medicare payments directly to physician extenders or payment for physician extender services not provided *under the supervision and direction of a physician.*"

The second resolution offered from South Carolina opposed any attempt to change current policies regarding the confidentiality of P.S.R.O. data whether such changes be made by legislation or regulations, and urged that the Board of Trustees and officers of the AMA take vigorous action to prevent any changes. This resolution was overwhelmingly accepted without opposition.

The third was our resolution asking the House of Delegates to instruct the Board of Trustees of the AMA to withdraw its endorsement of HR-1818 and to refrain from introducing further national health proposals. It further resolved that the AMA be instructed to organize an educational campaign to alert the medical profession and the public to the dangers of national health insurance. This issue was not voted on directly as will be explained under the national health insurance discussion.

Of the many issues brought before the House during this session, there were three subjects that to my mind would have the most profound influence in the future course of medicine, and they provoked the most controversy. Let's consider them separately.

NATIONAL HEALTH INSURANCE

The issue of National Health Insurance is a perennial one. During this session, there was a report from the Board of Trustees and a report from the Council on Medical Services, each supporting the AMA's comprehensive health insurance package as described in HR-1818. There were three resolutions from State societies either opposing or asking withdrawal of support for HR-1818. There were two resolutions to reaffirm support of HR-1818. One asked for an amendment, and one asked for a moratorium. There was one resolution that asked for a binding membership pool of all members prior to proceeding with the AMA's bill, and there was one entitled "A Different Approach to National Health Insurance" (Resolution 85). This resolution was a "shocker" to all. It called for a federal health insurance company to be formed by the federal government to compete with private health insurance industry. This one was like sending the cat to take care of the canary. These two reports and the nine resolutions were considered on the floor of the House and in the Reference Committee together, and the issue was never completely clear cut. The final action taken by the House adopted the Board of Trustees and the Council on Medical Services report which in effect supports HR-1818. The vote was 46 against, 178 for.

Even though this vote would indicate a resounding support for HR-1818, it does not reflect the thinking of what I believe to be the majority of the members in the House of Delegates. All oppose a national health insurance in any form. There are varying opinions, ranging from those who desire some sort of federally supported insurance to cover catastrophic illnesses to those who feel it is a step toward full-fledged nationalization of medicine. The officers and trustees seem to feel that a bill of some sort has to be in the hopper in order for them to be at the discussion table on the issue at a national level. Many of the delegates who have formerly supported the officers and trustees in their position are beginning to have second thoughts about the necessity of the AMA promoting a bill of any sort. The tide may be beginning to turn, at least that's the way it looks at the moment. I am sure this issue will be before us at the annual meeting.

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* Chicago, Illinois, December 4-7, 1977

** Delegate, Box 428, Estill, S. C. 29918.

NATIONAL COMMISSION ON THE COST OF MEDICAL CARE

Two years ago under the auspices of the AMA, a 27-member, independent commission was created to provide a comprehensive overview of health care cost and possible approaches toward solutions. The report of this commission was presented to the House of Delegates at this session, but was not discussed and the subject matter therein will be before the House at its annual meeting. A summary report of this commission's findings and recommendations were distributed nationally to the press and published in the *American Medical News*, December 5, 1977. There were a total of 48 recommendations under the following headings — eight recommendations to *strengthen price consciousness*, seven recommendations with regard to private sector *cost containment initiatives*, ten recommendations regarding the establishment of *guidelines for regulations*, seven recommendations as to *cost containment measures within medical practice*, nine recommendations as to *supply and distribution of health care providers*, four recommendations with regards to the *establishment of research guidelines*, and three recommendations on *consumer* and *patient education*. This report is destined to have profound effects on the practice of medicine, some good, some potentially dangerous. It recommends that the certificate of need be extended to the private physician's office. It recommends the ability to "decertify" facilities based on "need." All of these are important, and I would urge each member of the Association to obtain a copy of this summary report, either from the AMA or the SCMA office, so that you will be able to make recommendations as to your opinion on these important matters. Resolutions should be drawn for consideration at our annual SCMA meeting in Myrtle Beach to be taken to the AMA. From this commission's report will come the policy of the AMA. Your input is needed!

SPECIALTY SOCIETY REPRESENTATION IN THE HOUSE OF DELEGATES

The Council on Long-Range Planning and Development recommends that the by-laws be amended to add a new chapter to the by-laws entitled "Specialty Society Representation in the House of Delegates." This was adopted by the House of Delegates at this meeting. It offers direct representation in the House of Delegates to each national medical specialty society having 1000 members or more, and to those represented on an AMA section council in 1977 with fewer than 1000 members. It also opens the door to any other national medical specialty society which has an approved examining board listed in the directory of accredited residencies and published by the liaison committee on graduate medical education. This action will certainly broaden the base of AMA and tend to make it more of an úmbrella organization, but at the same time change the composition of the AMA's House of Delegates and may influence future policy decisions of the House of Delegates.

In considering the large amount of business to be transacted at the AMA House of Delegates meeting, subject matter is divided into sections:

(1) Recommendations as to Changes in Constitution and By-laws.

A report by the Judicial Council will be considered at the annual meeting regarding the AMA principles of medical ethics. This contains some radical changes in principles and needs consideration prior to adoption. Also presented to the Constitution and By-laws was a recommendation to change the title of chief executive officer from Executive Vice-President to Executive President. This was not adopted. This reference committee considered the specialty representation in the House of Delegates and most of the time was devoted to this action as previously reported.

(2) Insurance and Medical Service

The House of Delegates adopted guidelines to assist computer service organizations and physicians in maintaining the confidentiality of medical record information stored in computer data bases. A resolution asking the AMA to join the National Commission on Confidentiality of Health Records was referred to the Board of Trustees for study and to report to the House. There were several resolutions and reports from the Council of Medical Services involving the inequities in Medicare reimbursement to physicians, with particular reference to the rural/urban differences. Much discussion ensued, but what has occurred in South Carolina seems to be a model that most states would prefer; that is, a single geographic locality. There was considerable interest in what we have done here.

On the subject of abortions, a resolution was adopted requesting the AMA to advise the appropriate organizations and agencies that elective abortion services rendered under Medicare and in other Third Party payment programs should be recognized as compensable services.

There were several resolutions that had to do with function of P.S.R.O. Most of it centered around the necessity of maintaining confidentiality of information gathered by P.S.R.O. and it expressed opposition to the use of Medicare provider numbers to identify hospitals. There was expression that the AMA should continue to monitor and evaluate data forthcoming from studies of P.S.R.O. programs so as to ascertain the effectiveness and cost, and that this information should be conveyed periodically to the House of Delegates.

The House of Delegates recommends and adopts as policy that to vigorously undertake whatever activities are necessary, including legislation, to enable the physicians Current Procedural Terminology (CPT), edition 4, or later editions be recognized, accepted and utilized by all physicians, governmental and third-party payors. This is an important issue and it would be of much service to the physician, and all, if standardized language could be used nationwide in the making of insurance claims. Our House of Delegates in South Carolina has formally adopted this procedure in the past.

(3) Legislation

Foremost among the legislative discussions was National Health Insurance, previously discussed. The House adopted draft legislation prepared by the Council on Education which sought amendments to provisions of PL 94-484, The Health Professions Educational Assistance Acts of 1976, which require medical schools, as a condition of receiving capitation funds, to accept as third year transfer students who are enrolled in foreign medical schools. The horror of this type of legislation ever being presented in the national Congress is that this is a blatant usurpation of long standing medical school prerogatives to accept the most qualified student in its enrollment, and to my thinking is an encroachment on academic freedoms. Fortunately, there were some heavily endowed schools that had the intestinal fortitude to stand up and say no, and by so doing saved us all.

The House adopted report of the Board of Trustees on the development of draft federal legislation to require the preparation and publication of economic impact analysis for all federal regulations promulgated and a model state bill that would require state legislation to have fiscal notes on all bills. I feel that much legislation passed in the health field would not be introduced in the first place if the full fiscal impact were known.

The House adopted a resolution that the AMA has introduced which strongly supports passage of legislation that would place all governmental institutions, whether federal, except for the Department of Defense institutions, state, county, or municipal under the same health planning P.S.R.O. and other federally mandated health requirements which are imposed upon private institutions by federal law. This is fair and equitable. If the federal government can mandate us (tell us how to live), then they should live by the same standards.

Long discussions were held with regards to the Federal National Health Planning and Resource Development Act of 1974, public law 93-641, with particular reference to the guidelines published in the federal register, September 23, 1977. There was 100 percent opposition to these federal guidelines. Resulting from this, the House adopted a resolution condemning these guidelines. Foremost in the discussions was the feeling that this law (93-641) had within it the potential of the complete and ultimate control of the practice of medicine as to who and how services should be delivered more than any other federal legislation passed to this date. While trying to obtain amendments to this bill, every effort should be made to see that regional health system agencies, with their indigenous problems, establish their own criteria for medical facilities and medical services, and that it not be dictated from a bureaucratic level of Washington where the local conditions are not considered.

(4) Medical Education

There were concerns expressed about the apparent lack of practicing physicians as members of the liaison committee on continuing medical education. There was an effort to obtain more representation thereon. In addition, the Council of Medical Education is conducting a pilot study as to the feasibility of establishing a central data source for continuing medical education credits. A report on this will be forthcoming at the Annual Meeting, 1978.

There was strong interest among the young physicians, interns and residents, and many of the faculty school representatives to improve nutritional courses in the Colleges of Medicine, and to introduce into the curriculum a more formal method of bringing about the awareness and understanding of the cost of health and medical care to the student and graduate physicians.

As usual there were a number of "essentials of approved residencies" in various fields amended and approved at this session.

(5) Hospital and Medical Facilities

The House adopted a policy statement on the primary responsibility for hospital patients. It urged a cooperative endeavor between the medical staff and the governing body of the hospital in promulgating rules and regulations which are consistent with the community needs and applicable state laws and regulations. It urged that all governing boards rely on the recommendations of the organized staff as to which individual is qualified to provide services in the hospital within the scope of their legally organized area of practice. It also urged that the hospitals consult the legal authorities to keep apprised of state laws and regulations governing the extension of hospital practice privileges, and limitations on the scope of practice of individuals licensed or authorized to assume direct and independent patient care services.

The House adopted guidelines for physicians attending patients in long-term care facilities.

After much discussion, the House adopted a policy statement with regard to physicians' offices in hospital-owned buildings. This statement is set forth in the 1977 edition of the *Judicail Council Opinion and Report* on page 40 entitled "Fee Splitting: Rentals." This in effect says that physician rental arrangements should be on a fixed fee and not a percentage basis.

The House adopted as a matter of policy a statement of the Joint Commission on Accreditation of Hospitals, effective January 1978, which states that the physician who is a member of the medical staff should be eligible for full membership on hospital governing boards and that a member of the hospital medical staff should have the right of representation to all meetings of the governing body, if he so elected, by the medical staff. The House, as a matter of policy, opposed the mandatory delegation for the diagnosis and treatment of the private patient primarily to the house staff physician in a teaching hospital, and it sets forth, however, that the private physician should permit the intern and resident participation in the care of his patient, but firmly resolves that there shall be one physician responsible for the overall care of the patient in a hospital.

(6) Scientific-Public Health

Dr. John Hawk served as the chairman of the reference committee on this subject and we commend him for the diligence of his effort. The House adopted an expansion of AMA policy opposing mandatory patient package inserts for all drugs and advocated adoption of basic principles in any program designed to supply adjunctive drug information to patients. The report recommended careful evaluation of the impact of patient instructional leaflets on the quality of medical care.

The issue requiring the greatest in-depth study and provoking the most discussion was the issue of the legal status of marijuana. The amendment of Report D of the Council on Scientific Affairs draws this conclusion, "The trend toward modifications of marijuana possession laws to reduce the severity of the penalties, therefore, should be encouraged in the interest of both the individual and society. Penalties in the form of fines should be applied to possession of small amounts, with criminal sanctions imposed for trafficking.

"This more realistic and humane legal approach, once taken, should be enforced vigorously and equitably so as to discourage use wherever possible and to reflect the continuing conviction that marijuana is not a harmless drug."

Here, again, the discussion of the legal and medical definition of death was considered. A substitute resolution reaffirms the established policy that death shall be determined by the clinical judgment of the physician using the necessary available and current criteria, and that in those states where legislation is supported to recognize the legality of determination of death based on irreversible cessation of brain function, provisions should be included to assure the physician's right to exercise his medical judgment in diagnosing death.

The House adopted a resolution on the promotion of exercise, recognizing that it has significant cardiovascular benefits, and urged the AMA to do a feasibility study in developing a public and professional education program emphasizing the advantages of regular exercise.

The House urged the Board of Trustees to work with the FDA and the Council on Scientific Affairs to adopt procedures that would require the FDA to accept foreign data in the clinical investigation of "new drugs" and to help alleviate the "drug lag" in this country.

Numerous reports on many subjects were made by the Board of Trustees and were considered separately in a reference committee. These had to do with future plans of the organization with recommendations by the Board of Trustees as to changes in current operations and statements of the Board to enlighten the House of Delegates of its current operations.

(7) Awards

Dr. Benjamin Rush Bicentennial Award for Citizenship and Public Service

The award of a plaque and $5,000 stipend was presented Luis Martin Perez, M.D., of Sanford, Florida.

Distinguished Service Award

The House of Delegates selected William P. Longmire, Jr., M.D. of Los Angeles, California.

Citation of a Layman for Distinguished Service

The House of Delegates selected Mr. J. Ed McConnell and Mr. John Alexander McMahon.

I close this report to you by reporting the address made to the House of Delegates at the beginning of this session by John H. Budd, M.D., President, American Medical Association. He entitled his address "Aggressive Moderation." His address principally was an appeal to be prepared to weather the current cloudiness on the National Health Insurance issue which he feels will soon turn to a storm cloud. He feels that the only way to be prepared is "by pushing as hard as we can and as concertedly as we can for our own Comprehensive Health Care Insurance bill. Only through this measure can we meet the challenge I set forth earlier; the challenge of simultaneously doing justice to the public interest and our professional rights. Only through this measure can every American, regardless of financial means, have open doors to the full benefits of the American health-care system without running into bureaucratic walls. In offering this bill and gathering Congressional support for it, we of the AMA are not sticking our necks out. On the contrary, it is a reasonable and responsible way to save them." Needless to say, there are many who disagree with Dr. Budd on this issue.

Dr. Budd urges "that we physicians, in cooperation with hospitals and insurers, pursue workable means of cost containment."

Dr. Budd criticizes the federal government on some of their inaccuracies in reporting to the public on cost of medical care and monies received by physicians. He mentioned that "HEW Secretary Califano himself was quoted by the Associated Press as estimating Medicaid waste at more than $2 billion a year with errors by government agencies accounting for 62 percent of the losses ascribed to ineligible recipients."

He mentions the exaggerations of unnecessary surgery promoted by those who would federalize us. When the matter of unnecessary surgery is considered, the evidence shows that physicians and their wives have a higher rate of surgical procedure than the public at large. "If doctors are needlessly operating on each other, that would be a pretty sorry form of log-rolling!"

He urges physicians not to apologize for our form of medical care delivery. He calls attention to the fact of reduction in infant mortality rate and the reduction of the adult death rates.

He quotes the Johnson Foundation spokesman who commented "things have changed, and changed for the better. The data suggest that our American system does work, and perhaps better than we are sometimes wont to recognize."

Dr. Budd continues, "The reality of achievement helps point up what a tremendous teaching job you and I have to do. But to do that job effectively, you and I have to come to grips with our attitude toward our individual selves and toward each other. We must stop apologizing for ourselves and for this great federation. . . . To sustain our equilibrium, we must have unity within this federation and in behalf of this federation. . . . No individual physician regardless of how big he may feel can stand up to Big Government."

He closes on this note, "I have argued the case of moderation because it alone can bring a sense of proportion to the issues that hit us from all sides. But through this House of Medicine, our moderation can be as formidable as all the issues and all of the winds that blow."

In striving to represent you, your opinion, and your philosophy at the AMA, we of the delegation need comments from you, and we need specific resolutions from the SCMA House of Delegates. We urge your active involvement and participation. □

Editorials

A CLOSE LOOK AT ACT 182

On June 10, 1977, Act 182 became law. Two aspects of this Act are of particular importance to the entire climate of medical malpractice and to the establishment of appropriate rates for professional liability insurance. These are: (1) six year statute of limitations, (2) the abrogation of the doctrine of charitable and sovereign immunity.

I Statute of Limitations

Section 10-143 of the South Carolina Code of Laws of 1962 provided that action for personal injury, i.e. malpractice, should be brought within six years of discovery of such injury. Act 182 has amended that code by adding section 10-145 so as to provide that actions for personal injury or wrongful death occasioned by medical malpractice by a licensed health provider shall be commenced within three years from date of treatment or three years from date of discovery not to exceed six years from date of occurrence; and that action for foreign objects left in the body shall be commenced two years from date of discovery.

A shortened statute of limitations was sorely needed by health care providers and professional liability insurers. Medical evidence and history, important to the defense of a malpractice case, tends to become clouded with the passage of time. With burgeoning volumes of files, lab data, and x-rays, microfilming of charts and alternate storage areas are often sought for medical information. Such practices hinder the recovery of data for defense and loss of such data and details may seriously hamper the preparation of an adequate defense.

Insurers, on the other hand, found it difficult to "get a handle" on the presence of claims in the population of the insured. Hence the controversial "incurred but not reported factor" is utilized to assure adequate reserves of money necessary for the solvency of the insuring company. Health care providers and insurers were therefore naturally optimistic with the possibility of the three year statute of limitations for South Carolina. After extensive discussion, negotiating and lobbying, a compromise was negotiated with the South Carolina Trial Lawyers Association and Act 182 has subsequently become law. The specific language of the law states that "any action to recover damages for injury to a person arising out of any medical, surgical or dental treatment or operation shall be commenced within three years from the date of treatment, omission or operation giving rise to the cause of action *or* three years from date of discovery *or* when it reasonably ought to have been discovered, not to exceed six years from the date of occurrence. When the action is for damages arising out of the placement inadvertant, accidental or unintentional leaving of a foreign object in the body of a person or the negligent placement of any appliance or apparatus in or upon any such person by any licensed health care provider by reason of any medical, surgical or dental treatment, such action shall be commenced within two years from date of discovery or when it reasonably ought to have been discovered." The keys to interpretation and implementation of this bill are: (1) the language "reasonably ought to have been discovered," (2) the fact that the burden of proof in a statute of limitations' defense rests on the defendant or the physician, (3) the attitudes of the courts toward "discovery."

A physician could of course announce to his patients that a wrongful treatment, omission or operation has occurred and document this appropriately with witnesses. No question would exist and the clock would be running out on the three year statute of limitations. On the other hand, the physician may not be aware that his patient feels that he has experienced personal injury. If a difference of opinion occurs as to when the act reasonably ought to have been discovered, a jury will decide if a six year or three year statute of limitations applies.

Within days of the passage of Act 182, the South Carolina Trial Lawyers Association circulated the bulletin entitled, "Recent Amendments in the South Carolina Statute of Limitations (House Bill 2614): The Modern Discovery Rule." This bulletin states that the Bill "constitutes a singular step forward in the protection of the rights of the *injured consumer* and patients at a time when other states are besieged with repressive statute of limitation bills sponsored by insurance companies and other special interest groups. . . ."

The attitudes of the courts is clearly stated by District Judge, Robert Hemphill:

> "Advocates of the 'discovery' rule, on the other hand, acknowledge the inevitable hardships experienced by doctors compelled to defend claims after considerable time has elapsed; yet they contend, it is fundamentally unjust to bar the claim of a patient who was reasonably unaware or in fact could not have been aware within the statutory time limit that his doctor had so negligently treated him as to effect future injuries. Where latent harm results from medical malpractice, even the six years afforded plaintiffs in South Carolina *could well be insufficient* for a layman to detect the existence of an injury or even to perceive the presence of symptoms which should lead him to seek additional medical assistance. *To bar the claim of such a plaintiff seems far more unjust than to subject a physician to suit concerning treatment in a case for which the medical history is clouded by the passage of time.* The very nature of medical evidence renders it most difficult for a dishonest plaintiff to fabricate and suggests that the negligent physician would be the principal beneficiary if the courts adopt a strict definition of when a cause of action for negligent malpractice occurs. Moreover, as the Supreme Court of New Jersey concluded when it adopted the 'discovery' rule in Fernandi vs. Strully, 35 N.J. 434, 451, 173 A. 2d 277, 286 (1961): 'If, as is to be hoped, the resulting jeopardy to defendants produces a greater measure of care in connection with surgical operations, so much the better.' "

It would therefore appear at this time that there has been improvement for health care providers. Under the old law, the statute of limitations for those patients past majority was clearly six years from discovery. Under existing law, the statute of limitations is three years from discovery not to exceed six years. The question of course is how the courts will interpret the discovery rule particularly in those appeals which reach the Supreme Court, which has yet to deal with this problem. Such questions conceivably could arise in the administration of an agent or drug years later found to have deleterious effect. Trial lawyers would hold that the "discovery rule" should apply and that the occurrence is not applicable as the patient had no way of knowing that he had been harmed. Hopefully the interpretation of the courts will be that of a strict six years from occurrence according to the statute of limitations. Such would seem to have been the attitude of the legislature toward the "discovery rule" when it is specifically limited in the statute of limitations to two years from discovery for foreign bodies left in the patients at the time of operation.

II Charitable and Sovereign Immunity

Charitable and Sovereign Immunity have been removed as a defense mechanism for all hospitals and medical facilities. Prior to May 10, 1977, charitable institutions were immune from tort liability. With the Supreme Court decision of that date (Brown vs. Anderson County Hospital), it was stated that a plaintiff injured through the tortious act of a charitable hospital could recover damages, if it could be established that the injuries occurred because of heedlessness and recklessness of the charitable hospital or its employee. There was no limit to liability established for such a recovery of damages through this common law approach.

With the passage of Act 182 (June 10, 1977), the doctrines of charitable and sovereign immunity were modified "to the extent that any person sustaining an injury or dying by reason of the tortious act of commission or omission of agents, servants, employees or officers of a charitable hospital or other medical facility operated or funded by the State, its agencies, departments, institutions, commissions, boards or political subdivisions may recover in any action brought against such hospital or other medical facility for such actual damages as he may sustain a sum not exceeding one hundred thousand dollars. Except as to licensed physicians and dentists, the judgment in an action under this section shall constitute a complete bar to any action by the claimant, by reason of the same subject matter, against the employee of the charitable or governmental entity whose act or omission gave rise to the claim; and a plaintiff, when bringing an action under the provisions of this section, shall only name as a party defendant the entity for which the employee was acting cannot be determined at the time the action is instituted. In the event the employee is individually named under the conditions permitted above, the entity for which the employee was acting shall be substituted as the party defendant when it can be so reasonably determined. The provisions of this section shall in no way limit or modify the liability of a licensed physician or dentist."

The injured patient, it would seem, will now have two avenues of approach against the medical facility for negligence.

1) According to Act 182 requiring proof of simple negligence but limiting the award to $100,000.
2) A common law basis will exist. This would be without damage ceilings and will also provide the ability to recover punitive damages.

According to the act, any person sustaining an injury may bring an action. "Any person" must be defined. Since the courts of South Carolina allow "personal injury" to be defined so as to include loss of consortium; an administrator or executor could bring action for wrongful death and pain and suffering while a spouse may bring action for the loss of consortium. This could very conceivably inflate the judgment to $200,000 per action.

This Act also provides the medical facilities supported wholly or partially by public funds may procure liability insurance from the Division of General Services of the State of South Carolina.

Considerable question now exists as to exactly who will be eligible for this insurance and what will be the cost of the insurance.

Since the Act specifically provides that a judgment against the hospital does not bar action against the physician or dentist, it is conceivable that a physician will be jointly listed on any and all claims. There also exists the possibility that an issue of indemnity might arise in which a hospital insured by the General Services Division, who pays a claim which arose from the negligent act of physician, who is insured by the JUA, would have a right of action against the negligent physician for the indemnification of the loss.

While continued optimism prevails for all health care providers, several questions now persist.

1) Will the courts liberally interpret and apply the "discovery rule" effecting essentially a six year statute of limitations for adult medical malpractice cases?
2) Will the Brown-Anderson decision prompt more common law complaints against employees of health care providing institutions?
3) Will the loss of sovereign immunity incite more frequent cases against institutions; and if so, will plaintiff's lawyers list all involved as defendants?
4) If more physicians are listed in such cases against institutions, what will the impact of this be upon the administrative cost of the JUA (administrative costs include processing and management of claims)?
5) Will non-JUA insured institutions seek to recover from, or have physicians share in judgments occasioned by the physician's patient?
6) Will the courts interpret injury as bodily injury or personal injury? The latter would allow a spouse and an administrator to recovery of $100,000 for each person.

There has been much sentiment towards the "development of local experience." Here, it would seem, we are dealing with local (South Carolina) law and local courts. Time will allow the development of this "local experience." Hopefully it will prove to be a healthy one for health care providers.

I thank Mr. Calvin Stewart of the South Carolina Insurance Department and Donald Richardson, Attorney, for their assistance in the preparation of this manuscript.

— JOHN P. SUTTON, M.D.

THE MEDICAL EDUCATION COMMUNITY ORIENTATION PROJECT

Deserving publicity is the MECO project, organized by the American Medical Student Association. This project places rising sophomore medical students from the Medical University of South Carolina *in communities* during the summer break.

The project has two primary goals. First, it is conceived as a step toward redistribution of health manpower away from the larger cities and medical complexes and into needy communities. Secondly, it provides students with an early exposure to clinical medicine — as it is practiced in communities.

Funding for these students has been provided primarily through participating physicians, hospital funds, and — occasionally — private citizens and AHEC. Because AHEC funding has been reduced, there is a definite need for additional funding sources.

National surveys indicate that over 50 percent of MECO participants return — years later — to the sites where they spent their summers! Thus, clearly, this is a worthy program.

Physicians and other persons interested in sponsoring a student, or in providing funding or other support for the MECO project, should correspond with:

Ms. Martha Price
Student Activities Office, Room 428
Administration Building
Medical University of South Carolina
171 Ashley Ave.
Charleston, SC 29403

Ms. Price is a sophomore medical student, presently serving as state MECO director.

— CSB

DEATH CERTIFICATES

The South Carolina Medical Association shares the concern of other agencies that our accuracy and efficiency in completing death certificates must be improved.

The information derived from death certificates is of great relevance. This is true not only for the family of the deceased, but also for medicine as a whole and for society.

In a forthcoming issue of *The Journal,* for example, an analysis of cardiovascular mortality in South Carolina by county will be presented. The data were largely derived from analysis of death certificates. They indicate the existence of a belt of counties through South Carolina with an unusually high cardiovascular death rate for white males. Such information is obviously of great epidemiologic importance — yet the conclusions are valid only to the extent that the input data reflects reality.

— CSB

THANK YOU, DOCTOR HEAVRIN

On behalf of the South Carolina Medical Association, the legislators of South Carolina, and the physicians who care for them, I wish to express to Dr. Lawrence A. Heavrin, of Spartanburg, our sincere gratitude for the generous donation of a portable electrocardiographic machine.

This portable EKG machine, as is known from our "plea," was much needed, and mere words of thanks cannot truly express our appreciation. All of us appreciate this gift. Thank you!

D. Strother Pope, M.D.
Co-Chairman, Committee on Legislative Affairs

PARASITES REMAIN A PROBLEM

Interest in parasitology is at a low ebb. The article on intestinal parasites in South Carolina in this issue of *The Journal* was submitted by the authors with the apologetic recognition that this subject has been somewhat of a "warhorse" for attention. Looking back over the years, information about the prevalence of parasites in South Carolinians has been published rather frequently in *The Journal*. Thus, the complaints which one hears that inadequate publicity has been given to the problem of parasites do not apply to our state.

Parasitic infestation is not unique to the Southeast. A recent editorial[1] pointed out that *Pneumocystis carinii* is probably ubiquitous, that most of us harbor pinworms, that 10 to 30 percent of us harbor *Trichomonas vaginalis*, that half of us have been infected with *Toxoplasma*, and that *Ascaris* and *Trichuris* are very common. Amebiasis is an especially difficult problem, because there are relatively few persons — even among physicians, laboratory technologists and Ph. D. parasitologists — who are skilled at recognizing *Entamoeba histolytica* in stool specimens. It seems that many laboratories have been reporting out false-positive examinations, mistaking leukocytes or macrophages with engulfed erythrocytes for *E. histolytica*. For diagnosis of amebiasis, greater reliance should now probably be placed on serologic testing.[2] Meanwhile, we should work on the practical problems of specimen collection. Often, it seems easier to arrange to have bilateral carotid arteriography done than to arrange for a careful examination of a properly-collected stool specimen.

CSB

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1. Weller TH: Parasites and the human condition. *Hospital Practice*, January 1978, pp. 11-12.
2. Krogstad DJ, Spencer HC Jr, Healy GR, Gleason NN, Sexton DJ, Herron CA: Amebiasis: epidemiologic studies in the United States, 1971-1974. *Ann Intern Med 88:* 89-97, 1978.

LETTERS TO THE EDITOR

To the Editor:

I want to commend Dr. Benjamin Riggs for his article in the November, 1977, issue of the SCMA *Journal*, "History of Psychiatry and Psychoanalysis in South Carolina."

The author decries the slow development of psychoanalysis in our state. We should know that our skills, whether psychiatric or psychoanalytic, will, in due time, bear fruit for our patients, if we ourselves are free of needs for professional acceptance and recognition. Our occupation is with our patients, not pre-occupation with ourselves.

Any new body of medical knowledge and treatment stands and grows on its own merits. Psychoanalysts, not only the "classical" (Freudian) ones, are all subject to this simple dictum. Psychoanalysis, through its offspring psychotherapy, has breathed new life and meaning into the doctor-patient relationship. This guarantees its rightful place within the mainstream of medicine. It has already been documented that the person of the therapist is the single, most effective tool in psychiatric and psychoanalytic therapy, regardless of theories, concepts, techniques or methods.

Toward the end of the article, the author indulges invidious comparisons about other psychotherapists and doctors. This gives the impression that psychoanalysts are "elitists," living professionally in "ivory towers." I am sure that his eagerness to advance the cause of psychoanalysis produced this stumbling. To the author, may I suggest a comforting Latin phrase, "Fortes fortuna juvat" (fortune favors the brave).

Norton L. Williams, M.D.
315 Calhoun St.
Charleston, S. C. 29401

President's Page

TO MY FELLOW PHYSICIANS:

The new Medicare/Medicaid statewide reimbursement system is now in effect in South Carolina, and it is essential that all physicians understand this new system of reimbursement for Medicare and Medicaid patient care. No longer do we have geographic differentiation with regard to physicians' prevailing charges. Under the present system of maximum allowable charge determination, all physicians in the same recognized specialty have the same maximum or prevailing fee for Medicare and Medicaid reimbursement. There has been no change in the policy requiring that actual physician reimbursement be calculated under the "customary and prevailing" method. Actual reimbursement to physicians across South Carolina will be based on the lesser of the physician's actual charge, his customary or profile charge, or his specialty's prevailing charge. Limited data are available for your study at the SCMA; detailed information is available at Blue Cross and Blue Shield of South Carolina. If you have any questions, please contact Blake Williams at the SCMA office in Columbia.

I urge all members to become actively involved in our legislative "grass roots" program and work with their legislators. Your involvement can make a difference on issues presently before the General Assembly, including the expansion of optometry and chiropractic, the establishment of a cancer institute at State Park, Laetrile, generic substitution, the creation of a statewide medical examiner's system, and several professional liability bills. There is a lot at stake for physicians and public health in the legislative process. In consideration of the legislative decisions affecting our profession and public health which are being made daily in Congress and the S. C. General Assembly, every physician should also become involved in the 1978 campaigns — through SOCPAC membership and individual participation. Remember, early support is the most needed and best appreciated.

The annual convention of the South Carolina Medical Association will be held Friday, Saturday and Sunday, April 28, 29, 30, 1978, at the Myrtle Beach Hilton in Myrtle Beach, South Carolina. A great deal of work will go into making this the best meeting we have ever had. The officers and councilors of the South Carolina Medical Association extend a cordial invitation to every physician in the state to attend and participate in our annual meeting.

Waitus O. Tanner, M.D.
President

AUXILIARY PRESIDENT'S PAGE

Nancy Carter reports to us this month on International Health.

ELISE CAIN, *President*

INTERNATIONAL HEALTH

Helping others is good mental therapy. It is with this in mind that the South Carolina Medical Auxiliary is involved in International Health projects.

International Health projects make excellent programs with which to approach other groups in the community to suggest cooperative efforts. This usually brings rewarding results and relationships. It is good public relations. Working with scouts or church groups are suggestions. It has been the rewarding experience of several Auxiliary members to work through their church organizations to serve in medical relief mission programs. One Auxiliary has established a scholarship for nursing students in a foreign hospital through the local church.

Everyone cannot serve personally in a foreign country. There are, however, many agencies that need help. All of them are funded by donations. All use volunteer help as much as possible, but they need cash for office supplies, printing, postage, etc. Examples of this type of agency are World Medical Relief, Inc., Project HOPE, Project CONCERN, and the Medical Assistance Program. There are many others. The South Carolina Medical Auxiliary has made contributions to some of these agencies. In addition, hygiene kits and leper bandages have been prepared and numerous cartons of drugs have been sent to World Medical Relief, Inc.

Correspondence with medical families in foreign countries or hospitality extended to foreign medical personnel that may be in the local community is another way we can reach out in the field of International Health.

There are so many projects that we can undertake and each one is a step in improving the health of the world and establishing better relationships among people of all nations.

NANCY S. CARTER
Chairman, International Health
Greenwood, S. C.

SCMA ANNUAL MEETING

The one hundred thirtieth Annual Meeting of the South Carolina Medical Association will be held April 28-30, 1978, at the Myrtle Beach Hilton, Myrtle Beach, South Carolina. A record attendance is expected for this annual event, according to Speaker of the House, William H. Hunter, M.D.

The House of Delegates will meet on Friday, and again on Sunday, to conduct the business of the Association. Reference Committee meetings are scheduled for Friday afternoon. Other events of interest include the Annual Banquet on Saturday evening, the SOCPAC luncheon on Saturday, at which Congressman Floyd Spence will be the speaker, and the MUSC Alumni Luncheon on Friday.

The 1978 Scientific Session is being held on Saturday morning, April 29, beginning at 9:00 a.m. Joseph C. Ross, M.D., Chairman of the SCMA Scientific Program has advised that principal speakers and topics are as follows: "Reduction Mammaplasty" — Robert F. Hagerty, M.D.; "Intrascrotal Masses: Differentiation, Diagnosis and Management" — Stephen N. Rous, M.D.; "New Techniques in Radiology" — Gerald M. Rittenberg, M.D.; "Newer Concepts in Medical Genetics" — Roger E. Stevenson, M.D.; "New Developments in the Management of Acute Spinal Cord Injury" — Phanor L. Perot, M.D.; "Current Indications for Hysterectomy" — Edward J. Dennis, M.D.; "Psychiatric and Neurologic Side Effects of Antibiotics" — Allen H. Johnson, M.D.; "Chronic Pancreatitis" — Marion C. Anderson, M.D.; and "The Continuing Search for the Causes of Human Cancer" — Albert B. Sabin, M.D.

For advance registration, please complete the form appearing below and mail it to the South Carolina Medical Association offices.

S. C. MEDICAL ASSOCIATION ANNUAL MEETING REGISTRATION
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PHYSICIANS IN THE NEWS

Harold E. Jervey, Jr., MD, of Columbia, was elected President and Chairman of the Board of Trustees of the Educational Commission for Foreign Medical Graduates (ECFMG) during the recent annual meeting.

ECFMG is a non-profit organization sponsored by the American Board of Medical Specialities, the American Hospital Association, the American Medical Association, the Association of American Medical Colleges, the Association for Hospital Medical Education, the Federation of State Medical Boards, and the National Medical Association.

ECFMG concerns itself with foreign medical graduates (FMGs) — their needs for information and for assistance, and their evaluation regarding qualifications for entry into American health care systems. Offices are located in Philadelphia, Pennsylvannia.

Dr. Jervey was active with the South Carolina Board of Medical Examiners for two decades, and for 25 years has been active in the Federation of State Medical Boards. He served as president of the latter organization in 1960-1961.

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THE S. C. DERMATOLOGICAL ASSOCIATION will hold its annual meeting, April 29-30, 1978 at the Myrtle Beach Hilton. A. M. Robinson, M.D., President, announced that guest symposia leaders will be Dr. Lamar S. Osment, Professor of Dermatology at the University of Alabama Medical Center, and Dr. William P. Jordan, Professor of Dermatology at the Medical College of Virginia.

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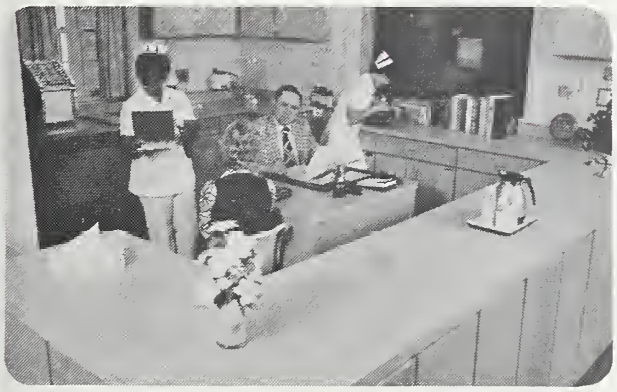

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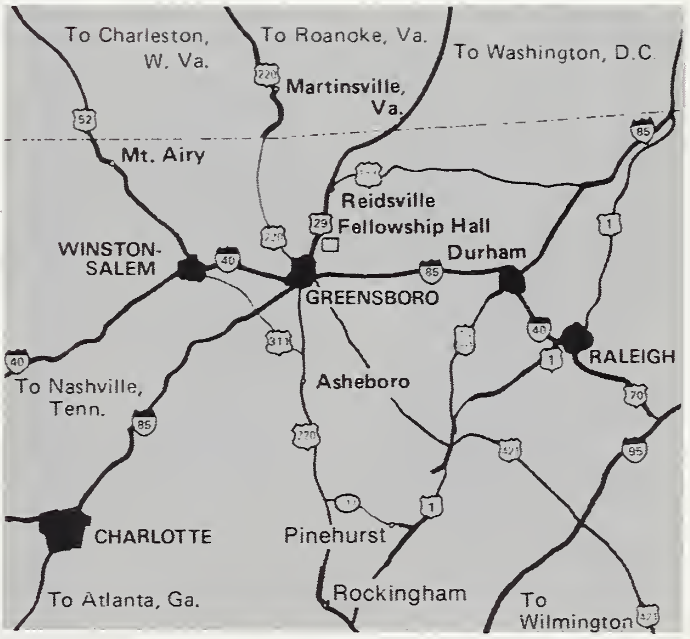

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

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THE JOURNAL
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VOLUME 74 APRIL 1978 NUMBER 4

CORONARY HEART DISEASE AND STROKE DEATH IN SOUTH CAROLINA: GEOGRAPHICAL DIFFERENCES

JULIAN E. KEIL, M.S., Dr.P.H.*
MURRAY B. HUDSON, M.P.H.**
W. TED STILLE, M.S., Dr.P.H.***
S. HOPE SANDIFER, M.D.****

INTRODUCTION

Cardiovascular diseases are the leading causes of death in the United States, accounting for 50% of all deaths of all ages. The picture in South Carolina is comparable to the national statistics.

Figure 1 reveals the similarity between South Carolina and national statistics on cardiovascular mortality. As a percent of total deaths in 1972, South Carolina and the nation maintained approximately the same levels of cardiovascular disease mortality. The observed variations in these mortality levels between South Carolina and the nation are less noticeable when the wide variations in these levels among all the states are considered. When cause-specific death rates for all the states are ranked from high to low, with the highest receiving the lowest ranks, South Carolina ranks 38th in cardiovascular disease. In the major components of cardiovascular disease, South Carolina ranks 38th in ischemic heart disease-related mortality, 20th in cerebrovascular, and 3rd in hypertension-related mortality.

Percentage Comparisons of Deaths
Attributable to Cardiovascular Disease
and Major Components of Cardiovascular Disease,
United States and South Carolina, 1972

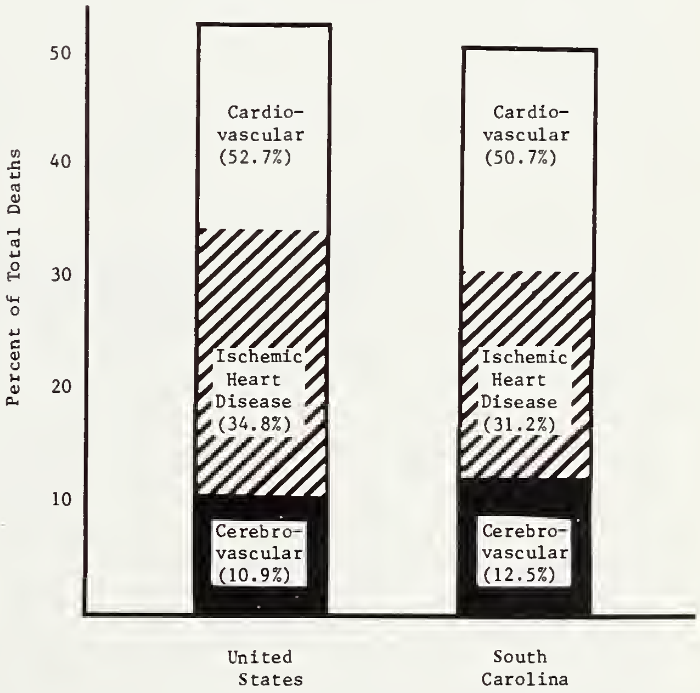

Figure 1

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HEART DISEASE AND STROKE DEATH

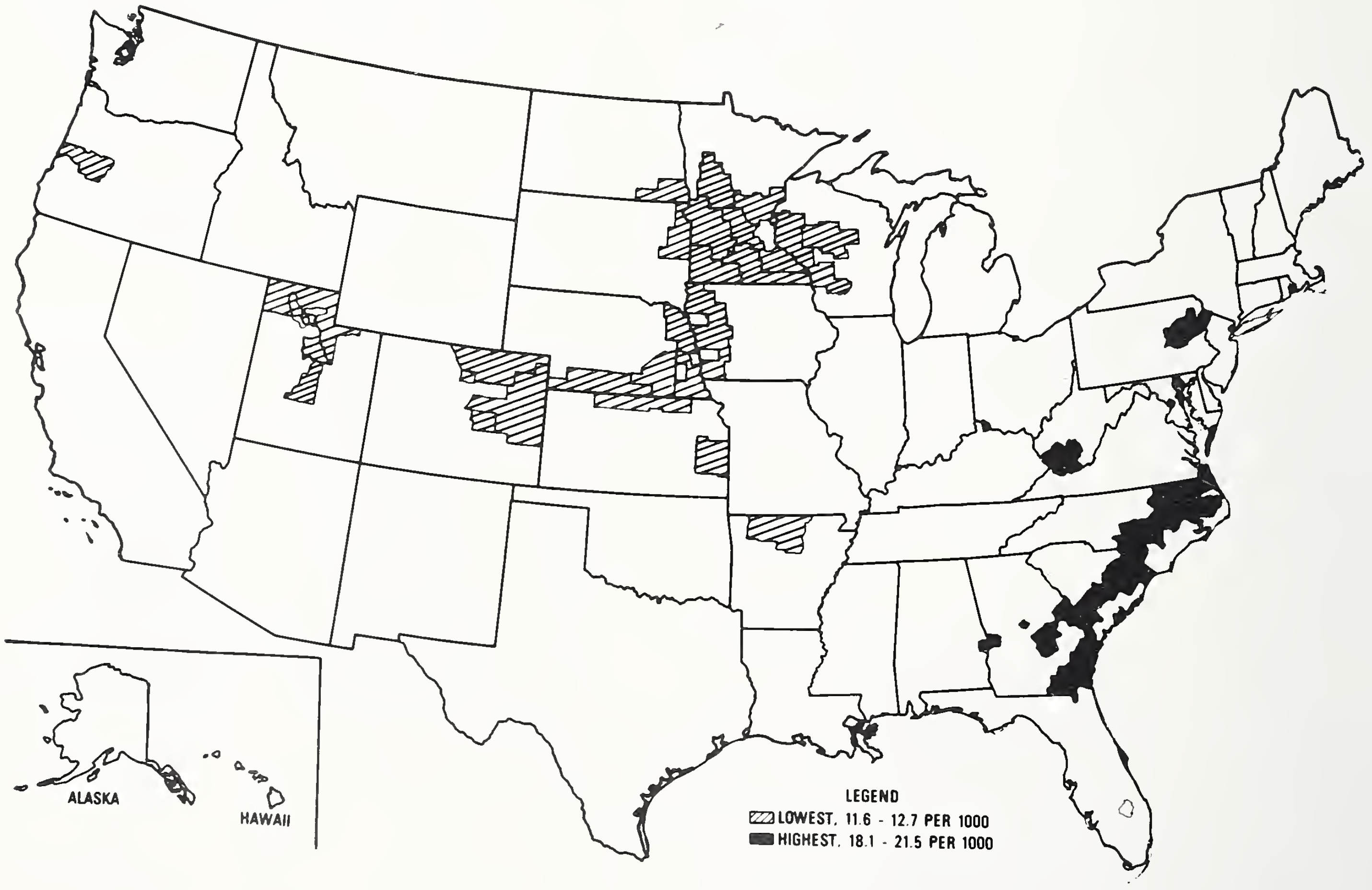
The causes of the principal cardiovascular diseases, defined here as coronary heart disease (heart attack) and cerebrovascular disease (stroke), are largely unknown. Dedicated research on the cardiovascular diseases did not begin until about 1941 when, according to Strickland,[1] the total expenditure was $5 million of which $0.7 million came from the federal government. By 1976, the U. S. Government's commitment to heart and lung research had increased to $300 million, undoubtedly supplemented by an equal amount from state governments and private sources. The $300 million allocated for heart and lung research is small compared with the $3 billion appropriated for the space program or $600 million for cancer.

Cardiovascular research has, as its major accomplishments, the establishment of age, race, sex, and geographic differences and the identification of heart attack risk factors such as hypercholesterolemia, hypertension, cigarette smoking, behavior type A, glucose intolerance, and lack of physical activity. Yet, these risk factors probably can predict no more than 50% of all heart attacks (Kuller[2]).

Thus, the cardiovascular researcher still has a challenge to identify the other components of the heart and vessel diseases. Sauer[3] considers the "enigma of the Southeast" to be a high-rate area extending from Alabama to Virginia including a band of South Carolina counties which tend to parallel the fall line (see Figure 2). Sauer concludes that the data shown in his study do not support a relationship between high cardiovascular death rates and soft drinking water, radiation, or population density.

FIGURE 2

ALL-CAUSES DEATH RATES FOR WHITE MALES AGE 35-74,
25 LOWEST AND 25 HIGHEST--DEATH-RATE STATE ECONOMIC AREAS,
1959-1969


ALASKA
HAWAII
LEGEND
▨ LOWEST, 11.6 - 12.7 PER 1000
■ HIGHEST, 18.1 - 21.5 PER 1000

This paper suggests that the other causes are identifiable. We also propose that the first step is to describe the magnitude of cardiovascular disease mortality (a generally undisputed end point) in South Carolina and to observe area differences. Such differences may be a beginning point in the elucidation of new risk factors or the operational levels of known factors.

This report presents age-adjusted death rates for Coronary Heart Disease (CHD), stroke, and hypertension for each of four race-sex groups, aged 35-74 years, by each South Carolina county for the period of 1969 through 1971, and some of the relationships between cardiovascular disease rates in the state's 46 counties.

METHODS

Mortality statistics for South Carolina reflected in this article were derived from death certificates filed with the Division of Vital Records of the South Carolina Department of Health and Environmental Control.

By law, the registration of deaths is the direct responsibility of the funeral director or person acting as such. The funeral director secures all data except the cause of death which the attending physician or coroner completes.

When death is, or is suspected to be, the result of an accident, homicide, or suicide, the law requires the county medical examiner or coroner to certify the medical part of the death certificate.

After the death certificate is completed, it is filed with the county/deputy registrar who verifies completeness and accuracy and then transmits the original certificate to the state registrar. The state registrar again reviews all certificates for accuracy and completeness, makes additional queries when necessary, and then assigns a state file number to each.

Trained nosologists code the underlying cause of death according to the *International Classification of Diseases, Adapted for Use in the United States*. The Eighth Edition was used in this study.

Since the medical certification of death can be made only by a person authorized by law, usually a physician or a coroner, the reliability and accuracy of cause of death statistics are, to a large extent, governed by the acumen and ability of the medical attendant to make the proper diagnosis and by the care with which the death certificate is filled out. However, Kuller, et al.,[4] who sampled death certificates in areas of high, median and low cerebrovascular disease mortality including South Carolina, found that variations in rates could not be explained by differences in certification practices (i.e., choosing the underlying cause of death among death certificates with a cerebrovascular disease diagnosis) nor to diagnosis practices.

These mortality statistics represent the underlying cause of death which is defined as the disease or injury which initiated the train of morbid events, leading directly to death. It is recognized that death may not result from a single morbid condition. However, the statistics in this article do not reflect contributory causes of death.

It is felt that the utilization of the underlying causes or conventional mortality information gives a reasonably good indication of trends in morbidity from certain very serious diseases having high case-fatality rates.

Delayed registration results in underenumeration of vital events for a specific time period. Investigation of death certificates registered late in a particular year and not reflected in published statistics is less than 0.5%. This percentage would have a negligible effect on the validity of the statistics contained in this article.

Mortality rates were age-adjusted by an indirect method using disease specific death rates for South Carolina for the period of 1969 to 1971.

A three year period (1969-71) was used for calculation of rates to even year to year variation and also to utilize the census year (1970) data as an appropriate denominator for the three year average of deaths.

RESULTS AND DISCUSSION

Coronary heart disease death rates for each South Carolina county for the period of 1969 to 1971 are given in Table 1. These data are shown by race-sex group and demonstrate a general clustering of high-rate (risk) counties in the Pee Dee area of the state. Darlington, Florence, Chesterfield, Union, Allendale, and Berkeley counties show the highest rates most consistently when all race-sex groups are considered. These results are consonant with Sauer's findings[5] for the period of 1959-61 in which he found Darlington, Dillon, Marion, Williamsburg, and Orangeburg counties to be among the highest ranking counties in the U. S. for mortality from all causes for white males.

Those counties with the lowest mortality rates for CHD include Edgefield, Abbeville, Jasper, and Beaufort.

Examination of Table 2, which lists stroke death rates by county and race-sex group for the same time period, suggests a somewhat similar clustering of high-rate counties in the Pee Dee area. The more consistently high-risk areas include Marlboro, Chesterfield, Georgetown, Marion, and Abbeville counties. Beaufort and Laurens counties had some of the lowest stroke death rates in South Carolina for 1969-71.

The often marked differences or inconsistencies in rates for the four race-sex groups within or between counties may be a manifestation of race or sex susceptibility (or resistance). This may represent a failure to discern significant differences in rates because of the underlying denominator populations. When small, slight variations in deaths may result in large differences in rates. Stated another way, there may be no significant differences in rates even when these differences are fairly large. When viewed from a national basis, most South Carolina counties are considered to be at high risk of CHD or stroke death when compared to other geographical areas of the U. S.

These data indicate that white and Negro males were at similar but highest risk of CHD death. Negro females ranked next, but death rates for white females were markedly below all other groups. White male rates were on the average three times higher than white female rates but ranged from twofold higher in Beaufort County to eight times higher in McCormick County.

In 39 counties CHD mortality rates for Negro males were on the average 1.8 times higher than for Negro females. In the other seven counties the female rates were only slightly higher than the male rates.

Stroke death rates generally followed the gradient: Negro males > Negro females > white males > white females. Negro male rates were about 1.5 times those of the Negro female but almost 5 times the white female rates. The ratios of Negro male to white female stroke deaths ranged from 1.8 in Pickens County to 10.2 in Lee County. Rates for white males were generally about twice those of the white females.

In almost all counties of South Carolina, white females were uniformly at the lowest risk of coronary heart disease and stroke.

Table 3 shows the coefficients of correlation (r) of CHD and stroke rates of the state's 46 counties considered by disease and each race-sex group. There is a strong and significant relationship between CHD death rates in all groups. This supports the idea of causal factors common to each race-sex group, even though the risk might operate at different levels within each group of each county.

A comparison of CHD and stroke mortality rates by race-sex group shows only one significant positive correlation (CHD WM and stroke WF). Other correlations are slight or are negative. Any interpretation of these relationships would be tenuous except to suggest that CHD is the stronger of the competing diseases; that is, people do not get an opportunity to die of stroke because CHD claims a larger proportion and thus, stroke death rates are inevitably reduced.

There appears to be little relationship between stroke death rates except between Negro males and females. This single significant correlation could indicate a common factor operating in Negroes or may be a statistical artifact.

IMPLICATIONS

These results and the accompanying data may well serve several purposes.

1. Provide baseline data for comparison of rates from previous and future time periods to discern secular trends.

2. Identify the counties and areas at highest risk so that causal factors may be more intensively researched.

3. The rather strong resistance of the white female to coronary heart disease and stroke may present unique opportunities to future study designs. □

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HEART DISEASE AND STROKE DEATH

Table 1

CORONARY HEART DISEASE[1] DEATH RATES[2] FOR SOUTH CAROLINA COUNTIES,
BY RACE-SEX GROUPS, AGES 35-74, 1969-71

County	W/M	W/F	N/M	N/F	County	W/M	W/F	N/M	N/F
Abbeville	590.5	128.0	476.8	497.9	Greenwood	678.3	234.1	1,023.4	511.1
Aiken	776.5	311.3	935.1	643.5	Hampton	892.9	265.6	855.5	441.1
Allendale	927.1	195.7	1,301.4	684.0	Horry	654.2	249.4	555.2	372.8
Anderson	668.7	229.7	614.6	465.5	Jasper	857.8	116.9	438.9	404.8
Bamberg	601.8	224.2	469.3	615.9	Kershaw	842.3	307.8	1,146.2	818.5
Barnwell	867.6	273.9	756.5	549.4	Lancaster	715.8	256.9	622.6	430.4
Beaufort	537.6	267.4	558.4	588.7	Laurens	856.4	250.7	938.5	611.6
Berkeley	772.7	334.0	1,160.5	827.9	Lee	642.6	284.8	715.1	334.5
Calhoun	573.8	182.9	448.3	524.9	Lexington	825.2	298.1	1,039.9	648.5
Charleston	737.8	274.8	630.5	517.6	McCormick	649.9	78.1	928.2	481.2
Cherokee	759.2	248.9	1,064.0	232.1	Marion	731.1	323.1	520.9	383.2
Chester	864.8	277.8	1,057.4	481.7	Marlboro	1,018.3	353.5	801.4	582.2
Chesterfield	978.9	308.1	801.5	687.8	Newberry	787.7	208.9	779.0	476.0
Clarendon	906.4	321.4	906.2	387.6	Oconee	697.8	224.3	974.0	844.8
Colleton	854.6	255.9	463.8	485.3	Orangeburg	747.9	219.7	522.6	332.7
Darlington	987.4	361.1	1,212.0	760.4	Pickens	732.3	257.1	848.8	471.4
Dillon	736.3	209.0	518.3	560.0	Richland	719.3	195.9	961.4	635.6
Dorchester	572.7	204.7	972.1	520.4	Saluda	707.6	152.6	698.7	286.3
Edgefield	581.6	172.6	611.2	493.9	Spartanburg	646.6	229.7	848.4	480.5
Fairfield	805.4	271.0	815.0	566.2	Sumter	704.4	253.6	619.5	475.4
Florence	877.7	333.5	975.5	653.4	Union	990.6	344.6	1,145.7	651.3
Georgetown	742.4	248.7	623.5	458.8	Williamsburg	919.7	280.6	976.1	583.2
Greenville	831.1	231.1	926.4	457.2	York	720.3	232.2	1,070.0	516.8

---

[1] Coronary Heart Disease = 1CDA 410-414

[2] Age Adjusted Rates per 100,000, indirect method using CHD rates for South Carolina

Table 2

STROKE[1] DEATH RATES[2] FOR SOUTH CAROLINA COUNTIES, BY RACE-SEX GROUPS,
AGES 35-74, 1969-71

County	W/M	W/F	N/M	N/F	County	W/M	W/F	N/M	N/F
Abbeville	233.5	145.5	202.5	570.0	Greenwood	179.5	97.1	510.1	303.5
Aiken	131.5	89.3	307.1	246.6	Hampton	158.1	114.9	357.4	284.7
Allendale	42.4	130.0	457.5	310.5	Horry	171.0	64.4	317.9	276.9
Anderson	138.5	49.2	344.5	207.2	Jasper	104.1	87.1	678.4	781.8
Bamberg	241.0	102.3	348.3	351.1	Kershaw	120.3	71.6	251.0	238.7
Barnwell	182.0	121.0	370.7	258.3	Lancaster	118.7	66.7	424.2	248.9
Beaufort	63.4	67.0	247.3	248.3	Laurens	142.4	58.5	316.5	153.8
Berkeley	108.8	99.3	381.1	289.8	Lee	156.5	70.4	714.5	312.1
Calhoun	126.8	77.6	375.6	283.5	Lexington	157.3	92.8	483.4	284.9
Charleston	121.5	88.9	350.0	245.4	McCormick	247.6	38.1	215.2	302.4
Cherokee	188.5	99.0	579.8	127.2	Marion	193.4	113.6	462.4	380.2
Chester	173.3	85.3	357.4	321.7	Marlboro	296.0	113.8	494.4	287.9
Chesterfield	228.7	133.1	485.2	355.5	Newberry	119.2	59.1	448.8	336.4
Clarendon	85.8	110.8	475.3	336.4	Oconee	91.9	94.1	461.7	198.5
Colleton	160.4	81.4	312.1	411.9	Orangeburg	119.0	65.2	513.7	334.6
Darlington	160.3	125.0	536.8	289.0	Pickens	120.2	121.4	221.1	187.1
Dillon	231.3	75.9	424.9	310.5	Richland	116.9	86.0	369.7	284.1
Dorchester	216.4	51.3	330.0	300.8	Saluda	144.6	109.9	887.7	483.9
Edgefield	104.0	85.7	396.4	288.4	Spartanburg	126.2	74.4	336.8	255.7
Fairfield	107.3	59.8	415.7	383.1	Sumter	127.4	86.0	331.5	234.0
Florence	206.3	132.5	485.2	327.3	Union	205.1	79.3	340.2	439.5
Georgetown	231.2	76.4	598.0	577.8	Williamsburg	99.3	95.8	644.6	408.5
Greenville	148.1	88.9	436.7	328.3	York	109.2	87.6	499.8	289.9

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[1] Stroke = 1CDA 430-438

[2] Age Adjusted Rates per 100,000, indirect method using Stroke rates for South Carolina

Table 3

CORRELATION COEFFICIENTS OF CORONARY HEART DISEASE AND STROKE MORTALITY RATES
COMPARED BY DISEASE AND RACE-SEX GROUPS, SOUTH CAROLINA, 1969-1971

	CHD WM	CHD WF	CHD NM	CHD NF	Stroke WM	Stroke WF	Stroke NM	Stroke NF
CHD WM	1.000	.545**	.473**	.294*	.069	.369*	.214	.093
CHD WF		1.000	.361*	.349*	.056	.272	.016	- .299*
CHD NM			1.000	.487**	- .148	.164	.031	- .334*
CHD NF				1.000	- .085	.179	- .304	- .184
Stroke WM					1.000	.128	- .045	.165
Stroke WF						1.000	.182	.159
Stroke NM							1.000	.387**
Stroke NF								1.000

*p<.05; **p<.01

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POST LUMBAR PUNCTURE HEADACHE: A REVIEW OF THE LITERATURE

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Since 1898 when August Bier, the father of spinal anesthesia, suffered and reported the first spinal headache, post lumbar puncture headache (PLPH) has been a problem. Its incidence has been reported to range from 2 to 20%. Vandam and Dripps report an 11% incidence of PLPH in over 9000 spinal anesthetics.[1] Numerous studies have been undertaken for the prevention and treatment of this frustrating problem.

Several theories have been proposed concerning the etiology of PLPH. Among these are, 1) a reflex decrease in production of cerebral spinal fluid (CSF) after dural puncture, 2) meningeal infection, and 3) meningeal irritation by local anesthetic agents.[2, 3] The consensus is that the PLPH results from leakage of CSF through the needle puncture site in the dura. This opening occurs intentionally when such procedures as myelography, pneumoencephalography, spinal block, or saddle block are performed, but may be an unintentional and/or unrecognized result of attempts to identify the epidural space. Through the opening in the dural membranes, CSF continues to be lost at a rate greater than its production from the choroid plexus resulting in a decrease in CSF pressure. The brain loses its fluid cushion and has a tendency to sag, particularly in the upright position, and tension is placed on its pain-sensitive anchoring structures. Typical location of the headache is occipital, or at the vertex, but other areas may be involved, especially behind the eyes. It may also be associated with nausea, vomiting, dizziness, and/or visual disturbances. Cranial nerve disturbances have been reported with incidence of 0.25%. 60% involved the 6th cranial nerve, 30% the 7th nerve and the remaining 10% involve the 3rd and 4th nerves, and rarely blindness results.[1, 4] A vascular-type headache may also ensue from a compensatory vasodilatation of the intracranial vessels to fill up space due to the loss of CSF.[5]

The headache usually appears on the 1st to 3rd post-puncture day, and lasts approximately 4 days, but they can last from 1 day to 1 year, ranging in quality from mild to severe. Other factors come into play at this time that serve to exacerbate the problem. Patients are becoming ambulatory, some are breast feeding, intravenous solutions have usually been discontinued, and changing antidiuretic hormone levels begin to exert their influence. Some investigators have shown that ADH output can be raised 40 to 50 fold during abdominal surgical manipulation and pressures created during labor and delivery may

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stimulate increased production of ADH in normal patients. ADH levels return to normal 3 to 5 days after these procedures. With the falling levels of ADH patients began to diurese the fluid load given during the perioperative or delivery period with a loss of the protection that increased volume may provide.[6, 7, 8]

Over the years, several techniques have been devised to lessen the occurrence of PLPH's. Among these are, 1) inserting the needle with the bevel vertical in an attempt to separate the fibers of the dura rather than cutting them, 2) preventing the loss of unnecessarily large amount of CSF during the tap, and 3) the twirling of the spinal needle as it is withdrawn to seal the dural rent.[2, op. cit., p358-360, 9] At the completion of the procedure, many recommend that the patient remain recumbent in bed for a period of time without a pillow. Probably the greatest decrease in incidence of PLPH is due to the use of smaller gauge spinal needles in performing spinal anesthesia. Winkler, et al., in their study demonstrated that the use of a 25 gauge needle resulted in only a 10.4% incidence of headache as opposed to 26% using a 24 gauge needle, and 23% using a 22 gauge needle.[10]

The literature is replete with reports concerning dural puncture while performing epidural anesthetics. Crawford reported 71 dural taps out of 1,000, 9 occurring with the catheter.[11] Dawkins reports 1,090 dural punctures out of 43,152 thoracic and lumbar epidural blocks (2.5%).[12] Quader, et al., have reported a case of multiple dural punctures.[13] These unintentional taps may have been due to a thin membranous dura which can occur as a congenital abnormality, or may be associated with tethering of the dura or adherence to the internal bony surfaces of the vertebral bodies which is common in the lumbar region.[13]

In obstetrical vaginal deliveries under spinal anesthesia, the incidence of PLPH is over 20%.[14] Reasons for this have been cited as the dehydration during labor, rapid postpartum blood volume changes, intra-abdominal pressure changes during labor, and lack of proper fluid replacement during and after delivery.

Tourtellotte, et al., in their book, listed alphabetically a total of 49 methods of treating PLPH. More commonly used methods to treat these headaches are rehydration and keeping the patient in recumbent position, abdominal binders, analgesics, sedatives, and epidural saline injections.[3] Most of these have produced less than desirable results. In 1960, Gormley reported on the epidural injection of autologous blood. He had noticed a decreased incidence of PLPH in those patients who exhibited bloody taps. He was impressed by this association, and attempted deliberate injections of blood into the epidural space. He stated that the injection of 2-3 ml at the site of dural puncture would relieve PLPH by forming a gelatinous tamponade which sealed the dural opening. In his initial series he reported immediate and permanent cure of PLPH with epidural injection of blood in 6 patients.[15] Digiovanni, et al., reported in one series of PLPH's an immediate and permanent relief of 89% of patients receiving an epidural blood patch.[16] Ostheimer, et al., in their series report complete and permanent relief in 182 of 185 patients, (98.4%) within 24 hours of an epidural blood patch.[17]

The technique of performing a blood patch is a reasonably simple and safe one. After aseptically prepping the area of the prior dural puncture, the epidural space is located using a loss of resistance technique. 10 ml of the patient's blood is aseptically withdrawn from a convenient vein, then slowly injected into the epidural space while watching for signs of cord compression.[18] As stated earlier, this has resulted in excellent relief of PLPH in as high as 98% of patients in some studies.

Although some investigators have voiced concern, there has been no difficulty shown in performing future epidural blocks in those individuals receiving epidural blood patches.[19]

Complications of blood patching are few. Nicholson has reported nerve root pain and parenthesias following epidural blood patching. These resolved by the 6th postoperative day.[20] Others have reported epidural hematomas which have caused cord compression with resultant radicular pain, progressing to paralysis.[21] Still other individuals report frequent but transient backache following epidural blood patching. Regional anesthesia should be terminated before any epidural blood patching is attempted.

Although epidural blood patching is not without its complications, it is a relatively safe and quite effective method, and when used properly, can provide real and immediate relief in those individuals suffering from a PLPH that do not respond to the more conservative measures. ☐

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CHANGING TRENDS IN MEDICAL ETHICS: CODES AND OATHS

JOHN P. DOLAN, Ph.D.*

Few debates in recent medical history have approached the acrimonious more closely and stirred such a wide variety of reaction as that between the medical ethicists and the traditionalist element in the medical profession. Fanning out from such centers as the Hasting Institute in New York and Center for Bio-Ethics at Georgetown University and with support from such prestigious institutions as the medical schools of Harvard, Yale and Columbia, the disciples of ethical reform have penetrated the faculties of medical schools in ever increasing numbers. Typical of the alarm over the rapid growth of individuals and groups concerned with the teaching of medical ethics is a recent article in the *New England Journal of Medicine* entitled "Ethics and Nonsense." The author, Daniel Greenberg, writes that he is increasingly disturbed by the creeping encroachment of people and agencies concerned about medical ethics as they affect medical practice and scientific investigation and wonders whether the time has not come for medical practitioners and biomedical scientists to assert their views more strongly.[1] Another physician, writing in the *Hastings Center Report*, asserts that most of his conversations with ethicists have tended to produce anger and a deep feeling of frustration.[2]

Responding to some of this growing criticism, K. D. Clouser of the Hershey Medical Center speaks of what he terms a backlash against the movement and points out in a conciliatory manner that medical ethics is not a reform movement as such and that it requires facts and conceptual analyses from many fields in order to do its work. The primary role of medical ethics is to "structure" the disputed issues — i.e., by detailing the relevant principles and implications, analyzing the pivotal concepts, and focusing on the relevant facts.[3]

Much of the present concern over the teaching of medical ethics is traceable to the tremendous socio-political changes that have affected the realm of medicine during the last hundred years. We can also cite as causal here the recent series of sensational legal battles over the right to abort or terminate life that have led to an attempt to redefine the concept of respect for life in the light of recent scientific advances. For Ivan Illich, whose recent work *Medical Nemesis* has added fuel to the fire, the problem is simply the centuries-old tension between empirical medicine and the rationalist tradition. According to Edmund Pellegrino, the director of the Health Science Center at the University of New York, Stony Brook, one of the most articulate advocates of innovation in the teaching of medical ethics, the discipline is in need of a revamping because of a triad of causes, scientific, public, and pedagogic. He points in the first place to the scientific and technological revolution of the last century which has transformed all aspects of medical transaction. In more recent times, he asserts, the profession has had thrust upon it the political reality that it is the right of every citizen to have a full measure of access to all the health services this country can provide, a belief in no way diminished by the experience of millions of servicemen during two world wars. Finally, the demand for reform and innovation in medical ethics is the direct result of the student revolt of the last two decades with its common complaint that medical curriculum has failed to engage the interest of the aspirant, is removed from the purpose of medicine which is to serve society, and is in itself a dehumanizing process that stifles all motivation.[4]

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Here Pellegrino condemns traditional methods in the teaching of medical ethics, the lecture and the emphasizing of principles. They have failed in the past and in the critical climate of today's student body they are bound to fail again. Hence, following a Socratic, rather than a didatic approach, he urges that the goal of ethician teaching be to sensitize all students to the importance of ethical issues, to open up key questions, to cast doubt on unexamined positions, and to encourage each student to establish some set of values of his own. Since in the past the teaching of medical ethics has been dependent upon compendia and codifications often summarized in oaths and formulae, it might be well to look into the origins of some of the comprehensive standards and public pledges used as guidelines for the medical practitioner.[5]

The origin of medical ethics and codes is, of course, as old as the practice of medicine itself. Although the *Oath of Hippocrates*, now generally regarded as traceable to the School of Pythagoras of the fourth century, is the most well known and honored formulation of moral standards for medical practice, it is but one of many attempts to formalize certain principles of conduct for the physician. One of the earliest of medical oaths is contained in the *Charaka Samhita* of Ancient India. The oath, to be taken by the medical student, obliges him to place the patient's needs above his own consideration, to serve him constantly night and day, to abstain from drunkenness, crime and adultery and to observe professional secrecy. Curiously the oath demands that the physician refuse service to enemies of the prince, unattended women, and those on the verge of death.[6]

The Ancient Chinese must also be mentioned as pioneering in the formulation of codes of medical ethics. *The Thousand Golden Remedies* of Sun Ssu-maiao, traceable to the sixth century, kept alive a tradition that culminated in the seventeenth century *Five Commandments* and *Ten Requirements of Chen Shihkung.*[7] The precepts reflect the tradition of gratuitous medical service by physicians of independent wealth in Ancient China. They are instructed to provide equal treatment to all patients regardless of social standing. Fees are to be kept to a minimum, the poor to be treated without charge. They are to keep themselves constantly informed in medical knowledge and observe uniform formulae in the preparation of remedies. An important injunction urges that physicians refrain from boasting and avoid insulting their peers. It is worthy of note that in spite of the westernization of medicine after the turn of the century, the Hippocratic Oath has had little influence.

In retrospect this is not surprising. Actually there was very little inclination in antiquity on the part of physicians to accept the original Hippocratic Oath since it was proclaimed a level of morality more strict than Platonic or Aristotelean ethics or even Greek law demanded.

It was the Stoic and later Christian ideologies that created a more receptive climate for the oath. Purged of its reference to the pagan dieties and the earlier covenant or contractual agreement having been replaced with the ideas of Christian brotherhood, it gradually gained acceptance in the West. During the Middle Ages the ethical principles of the oath found their way into the medical literature of the Muslim and Jewish World.[8] The Oath of Sefer Asaf found in the seventh century *Sefer Asaf* shows a strong dependence upon Hippocrates in its injunctions against administering poisons, performing surgery and betraying professional confidence.

The first important revision of the Hippocratic Oath was drafted by the newly organized World Medical Association in Geneva in 1948. Acknowledging that the language had become archaic and certain of its prescriptions irrelevant, the association issued a new Proclamation. The Association urged that the new Oath be accepted by medical schools and physicians of all nations and of all religious persuasions. Hence in contrast to the Hippocratic Oath, the Proclamation of Geneva contains no reference to religious belief. The Proclamation omits the surgical restriction of the Oath, recognizing the important role of surgery in modern medicine. Like the Oath, the Declaration emphasizes the physician's dedication to service. The element of confidentiality contained in the Oath is retained and an amendment of 1968 adds a specific clause that physicians honor confidence even after death.

It is interesting to note that in the Anglo-Saxon world the existence of Codes of Ethics for the medical profession is of a rather recent origin. Thomas Percival, the eminent epidemiologist of Manchester, England, drew up a guide for professional conduct for physicians and surgeons working in hospitals and other medical charities in 1794. The work was later enlarged to include physicians in general practice and published in 1803.[9] It was entitled *Medical Ethics* or *A Code of Institutes and Precepts Adapted to the Professional Conduct of Physicians and Surgeons.* The *Ethics* follows the Hippocratic tradition in that it urges physicians to treat patients with compassion and to observe professional secrecy. They are to keep their hands steady and their heads clear by observing temperance. The use of fraudulently advertised medicine is to be avoided. Patients are to be treated until the final stages of whatever illness may prove fatal; a special emphasis is placed upon the professional relationship of physicians to one another, to hospital personnel and others engaged in the care of the sick. The *American Medical Association* which was organized in 1847 adopted a Code of Ethics that was based for the most part on Percival's work.

The twentieth century has produced a number of ethical codes. Two of the most significant are the International Code of Medical Ethics adopted by the World Medical Association in 1949[10] and the Russian codes promulgated in the Soviet Union in 1971.[11] Both reflect in many ways the current trend away from an earlier preoccupation with the formalities of relationships between doctor and doctor and doctor and patient (medical etiquette) to a broader community of responsibilities of the physician. The oaths associated with these two codes reflect this shift of emphasis. The Oath of Geneva now in use in the majority of American medical schools reads: "At the time of being admitted as a member of the medical profession: I solemnly pledge myself to consecrate my life to the service of humanity. . . ." The Russian Soviet Oath reads: "Upon having conferred on me the high calling of physician and entering medical practice, I do solemnly swear: To dedicate all my knowledge and strength to the preservation and improvement of the health of mankind and to the treatment and prevention of disease, and to work in good conscience wherever it is required by society. . . ."

In addition to the more highly publicized areas of contemporary concern over medical ethics — euthanasia, abortion, experimentation, and the right to life — there are two extremely important fields relating to ethics that loom large on the horizon today. One is the problem of confidentiality, the other the question of autonomy. Whereas we have seen the notion of confidentiality has been retained in the more recently devised codes, its significance often seems irrelevant. Changes in methods of treating the sick have in the last century altered the concept of professional secrecy. The team approach, the taped interview, the staff meeting, and group practice may be mentioned in this regard. Added to this is the increasing mechanization and depersonalization of health care. Finally we must mention the intrusion of paramedical and nonmedical personnel into medical operations. Not the least of the intruders is of course the government.

This leads logically to the problem of autonomy. The arguments for and against socialized medicine and national health programs are too well known to be mentioned here. Yet we must point out that the dilemma of either accepting a stifling coercive collectivism or of following a *laissez faire* attitude in medical practice devoid of all social responsibility presents a real moral issue. Two important statements in recent years point to a possible solution to these perplexing problems. In the matter of confidentiality it is interesting to note the Second National Staff Conference in Atlanta in March 1972 adopted the following principle: "Patient confidentiality must be respected, although in certain situations the responsibility of the physician to the patient and to society at large may be irreconcilable. The patient should be forewarned whenever the physician suspects that confidentiality might be violated."[12] As regards the loss of autonomy through governmental partnership we cite the Principles of Medical Ethics adopted at the June 1957 meeting of the House of Delegates of the American Medical Association: "The honored ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community." □

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MEDICAL INSURANCE PEER REVIEW — PROGRESS AND PROBLEMS IN SOUTH CAROLINA

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INTRODUCTION

Those of us at the South Carolina Medical Association who have been involved in the SCMA Insurance Peer Review activities feel that we need to summarize for the members of the Association some of the activities and problems which have been occurring in the time that the committee has been functioning. The committee has now been in operation better than two years, and we feel that many problems have been solved; we hope we will continue to solve more problems in the future. This article will consider the progress of peer review only as it relates to the Insurance Peer Review Committee, and we will not delve into other peer review activities and mechanisms such as PSRO.

MAKEUP OF COMMITTEE

The present members of the South Carolina Medical Association Insurance Peer Review Committee are: U. Hoyt Bodie, M.D., Radiologist, Columbia, S. C.; Charlton P. Armstrong, M.D., Urologist, Greenville, S. C.; R. Randolph Bradham, M.D., Thoracic Surgeon, Charleston, S. C.; Daniel W. Brake, M.D., Family Practice, Conway, S. C.; Juan A. Brown, M.D., Otolaryngologist, Anderson, S. C.; W. W. Pryor, M.D., Internal Medicine, Greenville, S. C.; R. Erskine Moore, M.D., Orthopedic Surgeon, Florence, S. C.; Albert E. Cremer, M.D., General Surgery, Columbia, S. C.; Robert H. Stafford, M.D., Obstetrics/Gynecology, Columbia, S. C.; Kenneth W. Smith, M.D., Dermatologist, Anderson, S. C.; Earl H. Godfrey, M.D., Neurologist, Spartanburg, S. C.; and Martin M. DeBeukelaer, M.D., Pediatrician, Charleston, S. C.

This committee is appointed by the President, according to a definite plan set up in the Constitution and By-Laws of the South Carolina Medical Association. You will note that the committee has a multi-specialty diversification. The committee members also have to be approved by Council. A committee member cannot serve more than a total of four years in sequence. Also, the President of the South Carolina Medical Association and Council are trying to rotate appointments to allow all specialty groups to have representation at intervals. Consideration is given to geographic distribution.

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EXPLANATION OF DUTIES

Before we can fully understand the progress of peer review as it relates to the South Carolina Medical Association Insurance Peer Review Committee, we must be aware of what our committee is and what it does. The individual members have been identified above; we need now to briefly explain the responsibility with which these members are charged.

In the simplest terms, peer review is an "after-the-fact" examination and judgment of a fellow physician's sometimes split-second decision; peer review is an "after-the-fact" examination of the medical records and patient reactions, then passing judgment on a fellow physician's selected course of treatment; peer review is an "after-the-fact" examination of medical records and notes to compare and determine the equity of the physician's charges; and peer review is reporting a fellow physician for future possible investigation by the State Board of Medical Examiners.

The Insurance Peer Review Committee also assists Blue Cross-Blue Shield and other health insurers in settling claims disputes. According to our present contract with Blue Cross-Blue Shield, the committee can review only those cases referred by the carrier. An assigned committee member studies the records and researches each disputed claim in order to determine the appropriateness of the procedure performed or the course of treatment ordered, and likewise the appropriateness of the charges submitted. In all cases, the background material is provided in advance to the appropriate specialty representative on the committee for his research, report and recommendation to the committee as a whole for discussion and further input. We also have specialty consultants that are available for further consultation to the members of the committee. In all cases, including a fellow physician's pattern of practice review, the research and investigation is done in an atmosphere of complete openness. Direct contact with the physician in question is suggested. The results and recommendations of the committee with regards to disputed claims and in-depth patterns of practice reviews, are made known to the individual physician through a personal letter from the Chairman. Blue Cross-Blue Shield is asked to provide assistance in following up to determine if the recommendations of the committee are being adhered to. Insurance carriers are also requested to give a periodic status report to the committee in this regard.

Although the SCMA Insurance Peer Review Committee does all of these things, the committee does not have authority to take any corrective action. We can only make recommendations and counsel our fellow physicians. We have no absolute authority, and our fellow physicians do not have to abide by the committee's decisions. Usually, the Mediation Committee or the Disciplinary Commission does follow the recommendation of this committee, however.

Additionally, we feel that one of our more important duties is making recommendations to the insurance carrier regarding claims payment policies and guidelines. In the case of individually disputed claims, Blue Cross-Blue Shield, under contract, is obligated to abide by the decision of the committee. In the case of policy and guideline recommendations, however, the carrier is obligated only to take the recommendations under consideration. We are pleased that Blue Cross-Blue Shield, after consideration by the Board, has opted to approve and implement a large number of the recommendations of the committee. Some of these recommendations will be touched on later in this report.

EVOLUTION OF COMMITTEE

The evolution of the existing South Carolina Medical Association Insurance Peer Review Committee is the result of the efforts of Dr. Michael Patton of Spartanburg, who was primarily responsible for the development of the first SCMA Peer Review Committee several years ago. The members of this first committee were selected by the House of Delegates of the South Carolina Medical Association and represented the nine Medical Districts in the state. The Blue Cross-Blue Shield Peer Review Committee was established in the fall of 1975, after a study and recommendations of an ad hoc committee of the SCMA Council. The SCMA House of Delegates voted, in May of 1976, to combine both Peer Review Committees because of some duplication of duties, and thus the present SCMA Insurance Peer Review Committee was formed. The services of this committee are under contract with

Blue Cross-Blue Shield due to the overwhelming involvement of this carrier. However, other health insurance companies do have medical claims problems which are handled by this committee on a per case charge basis.

COMPARISON OF SCMA INSURANCE PEER REVIEW COMMITTEE WITH OTHER STATES

In comparing the SCMA Insurance Peer Review Committee to some of our neighboring states, it is evident that there are diverse responsibilities, avenues of authority, and approaches to similar problems. We are most familiar with the peer review process in the state of Florida, having attended one of their meetings. While we meet only one day each alternate month, they have week-end meetings at resort areas, and the physicians' wives usually accompany them. They do most of the work at the meetings, rather than doing some of the preliminary work at home, as we are accustomed to doing with our committee. In Florida, they have a budget of over one million dollars for this committee alone. They have full-time office personnel and they review many patterns of practice. They tend to steer away from disputed claims. The Florida Medical Association has set up an excellent method for corrective action on "problem" physicians. It may be that we will need to expand the length of our meetings as the work of the committee grows. The SCMA Insurance Peer Review Committee has recently taken on Medicare problems, and this will definitely increase the work load.

PROBLEMS FACED

Some of the problems that our committee faces today deal primarily with communication; *there exists a need to develop a better means of communication between the ever-growing Blue Cross-Blue Shield of South Carolina and the busier and busier medical practitioner.* There exists a definite dichotomy in the languages spoken, with each party assuming the other party fully understands his language. There are massive amounts of information retrieved daily from the computer, with form letters and printouts provided for the physician who is unable to fully interpret and understand their meaning. We all understand how difficult it is to communicate with a computer! A large number of the problems the committee continues to face are a direct result of this breakdown in communication which leads to doctors unknowingly continuing to miscode claims, performing new and/or combined procedures without being able to transpose those procedures into appropriate codes or suggest new coding which will conform to Blue Cross-Blue Shield standards. These physicians continue to have cases before the committee, and it is almost as though these doctors do not want Blue Cross-Blue Shield involved in any of the claims decision-making, obviously distrusting Blue Cross-Blue Shield because of their past experience with this carrier. Some doctors even have a desire to have all claims presented to the committee, but this is certainly not possible.

We feel that there exists a definite need for a contact person in the carrier organization with some authority who can communicate directly with a physician. There is lack of individualization, and there is definitely a lack of person-to-person contact. The philosophy of ignoring a problem or request and thinking it will go away does not accomplish a great deal.

REACTIONS OF DOCTORS BEING REVIEWED

What are the reactions of doctors who are brought before the Peer Review Committee for patterns of practice review? They may be categorized as follows:

1. Fear, rebellion, hostility, legalistic attitude.
2. Complete cooperation, humility, seeking guidance, wanting to get in step with his peers.
3. Round-about, "get even" tactics, hatred toward the carrier.
4. Searching for "paternal" guidance from the Chairman and committee members.
5. Bringing an entourage of friends to give a "This is Your Life" sort of testimonial to prove he is beyond reproach.

We see these five major categories of physicians appearing before our committee day in and day out. We have to learn how to react to these different categories, and we have to try to be fair to all type personalities. This makes the committee's task interesting but difficult.

EFFECT ON INSURANCE CARRIER OFFICIALS

1. Required to spend long hours of hard work gathering documented facts.

2. Must be sure that facts are accurate and beyond reproach.
3. Must be careful to assemble reasonable charges and accusations.
4. Have to constantly be aware of possible legal implications.
5. Need to understand reactions and attitudes of all the Peer Review Committee members.

Insurance carrier officials are often maligned unnecessarily and improperly. They have a job to do, and it is a difficult job, encompassing a very large operation.

UNUSUAL PROBLEMS FACED BY COMMITTEE MEMBERS

The very nature of peer review puts committee members in the limelight enough that friends are often lost, and at times committee members feel threatened and even hated by some physicians. There are feelings among doctors on the committee that they lose patient referrals because of committee actions. Things such as this create emotional conflicts, and physician partners speak of peer review committee members as bureaucrats.

The Chairman of the Committee has to work many hours to keep things running smoothly and coordinated well; an estimate would be 30 hours per month. He is required to do many behind-the-scenes negotiations, and he is required to handle accusing telephone conversations diplomatically.

Some of the qualifications that are essential for a good peer review committee member are: sincerity, honesty, easy-going manner but at the same time firmness. Committee members are often caught between the divergent views of SCMA doctors and insurance carriers. Doctors feel that decisions are often against their interest, and they find it hard to believe that the insurance carrier sometimes feels the same way.

PROGRESS MADE

How can progress in peer review be measured? Would it be a reduction in disputed claims, a reduction in problem doctors' cases, fewer and shorter meetings? We cannot actually pinpoint how one would measure progress in peer review, but we do feel that we have made definite progress through peer review in South Carolina. The SCMA Insurance Peer Review Committee has discussed, revised, and developed new policies and guidelines which have cleared up a number of controversial problem areas. The committee has recommended utilization review by psychiatrists in hospitals, and a model program is presently in progress at the Baptist Hospital in Columbia. The committee recommended utilization review of CAT scan procedures at several hospitals in the state, and we are currently conducting a survey of how the committee recommendations have been accepted and carried out. Thus far, we feel that appropriate utilization guidelines are being set up at our request. This is very important because of the major financial impact of CAT scans on the health care of the population in general and on the budgets of insurance carriers.

The committee has also been successful in getting payment allowed for multiple ENT procedures performed at the same time, as well as certain OB/GYN multiple procedures. After considerable study and discussions with dermatologists and plastic surgeons throughout the state, the committee was successful in recommending a payment schedule for the excision of skin lesions, a problem which has confounded the carrier and the physicians in the state for a long period of time.

A patterns of practice review of a South Carolina physician has resulted in a 50 percent reduction in his hospital admissions since the review was conducted. A list of cardiac catherization and angiographic procedures was compiled and included recommended fees and codes, and this list has been accepted and adopted by Blue Cross-Blue Shield. The committee was able to get Blue Cross-Blue Shield to allow for coverage for radiation therapy follow-ups for cancer patients for one year.

FUTURE EXPECTATIONS

Items cited above are just a few examples of what we feel represent definite progress, not only in the area of peer review, but towards rehabilitating some of the problem doctors and attempting to solve some of the communications difficulties which exist between physicians in the state and Blue Cross-Blue Shield. In most cases, these new policies have come to peer review after considerable efforts have been exhausted in attempting to calm the problem without resolving it. In the future, we would hope that our committee could become involved in the development of more and more policies and guidelines prior to their implementation in order to prevent possible problems, to solve these problems before they arise rather than "after the fact." Efforts are already being made in this direction, and we feel that insurance carriers will agree with us that the early involvement of peer review has had a favorable impact in most of these problem areas. We have continued to try to promote better public relations, and we will strive to do this even better. We hope that we will be able to get rid of some of the ambiguous form letters which come into doctors' offices from insurance carriers.

It should be apparent to all members of the South Carolina Medical Association that this committee is very busy and very actively involved in difficult problems with regard to medical insurance in this state. We beg the help and cooperation of every physician in South Carolina. We also beg the help and cooperation of all insurance carriers. A give-and-take attitude is not just a necessity; it is a requirement.

We appreciate your giving this committee your support. We also appreciate the opportunity of summarizing our activities in the *Journal of the South Carolina Medical Association.* □

After specializing in the treatment of alcoholism and drug addiction for 17 years, we found . . .

if there are problems and there is drinking... drinking may be the only problem!

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Editorials

SURVEY OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

Organizations, like individuals, need the ability to be self-critical, to accept criticism, and — at times — even to solicit criticism. Dr. Tanner discussed in the president's column in last month's issue of *The Journal* the findings of the evaluation survey of the South Carolina Medical Association, conducted August 2-4, 1977 by a site visit team headed by the American Medical Association.

We feel that any reader of the volume of analysis and recommendations resulting from this survey would be struck by the thoroughness, and also by the scope of the recommendations. This issue of *The Journal*, the convention issue, contains the reports of many of our committees. The survey team recommended that we take a hard look at our committee structures. It was felt that there seems "to have been a gradual, but continuous decline in the performance of the committee system," recognized as being unfortunate "at a time when the SCMA is girding to meet mounting needs and pressures."

This year's convention, therefore, represents an opportunity to evaluate and perhaps change some of our present committee structures. It was inspiring to witness the efficiency and thoughtfulness of the members of the survey team: Dr. James E. Davis (past president and speaker of the House of Delegates of the North Carolina Medical Society); Mr. William N. Hilliard of the North Carolina Medical Society; Mr. John F. Rineman of the Pennsylvania Medical Society; and Mr. Gene Scott and Mr. Bud Wright of the Department of Federation Communications of the American Medical Association. We thank them for their keen interest in our organization.

— CBS

IMPORTANT ERRATUM: RABIES IN SOUTH CAROLINA

The table reproduced here was omitted inadvertently from the article, "The changing status of rabies in South Carolina," by Drs. DiSalvo, Parker, and Dowda in the March 1978 issue of *The Journal*. The important points (evident in the text of their article) include (1) the increasing prevalence of rabies in the raccoon population, and (2) the recognition of rabies in domestic animals for the first time since 1963.

— CSB

INCIDENCE OF RABIES IN SOUTH CAROLINA
1968 - 1977

	SPECIES				
Calendar Year	Bat	Raccoon	Fox	Dog	Total
1968	0	0	0	0	0
1969	0	0	0	0	0
1970	0	0	0	0	0
1971	20	0	0	0	20
1972	12	1	0	0	13
1973	5	1	0	0	6
1974	6	0	0	0	6
1975	8	2	1	0	11
1976	2	2	1	0	5
1977	16	18	1	1	36
TOTAL BY SPECIES	69	24	3	1	97

NEW TRENDS IN MEDICAL ETHICS

The physicians of ancient Babylon were warned, in the Code of Hammurabi (2250 B.C.), that should a patient die or become blind as a result of treatment, the physician's hands would be amputated (should the patient be a gentleman), or full value would be rendered for the damages (should the patient be a slave). These provisions are cited from time to time as a reminder of our heritage of unique responsibilities. But one caution should be added: there is essentially *no evidence* that any Babylonian physician was ever punished to the full extent of these provisions.

The Hippocratic Oath is similarly cited as a reminder of the historical basis for our ethical responsibilities. For centuries, indeed, this oath provided the nucleus for medical ethics, and was thought to embrace the wisdom and teachings of the famous School of Cos. With only a few reservations (such as the pledge that "I will not use the knife"), the oath was accepted as a message of timeless validity until well into the present century. But again, a caution should be added: there is apparently *no evidence* that any physician in Greek antiquity ever actually took the Hippocratic Oath — indeed, the oath was not even written by Hippocrates or his followers. The scholarly work of Dr. Ludwig Edelstein[1] exposed the oath as a "Pythagorean manifesto and not the expression of an absolute standard of medical conduct."

In this issue of *The Journal*, Dr. John Dolan provides a scholarly overview of present trends in medical ethics. Medical ethics is now taking on "the trappings of a field or discipline."[2] Such trappings include at least eight journals, formal courses in many medical schools (and in even more schools and universities on the undergraduate level), and a vast and growing body of literature. The numerous persons devoting the major portion of their working hours to medical ethics derive from various disciplines, including not only medicine but also nursing, religion, biology, law, sociology, and philosophy. These workers extend their concerns well beyond the "classical" problems, such as euthanasia and abortion. Two major *trends* have been identified: (1) emphasis on research into the broader problems of *health policy* (such as cost containment, insurance, and mass screening), and (2) emphasis on research on the *essential theories* of medical ethics (such as the contractural basis for the doctor-patient relationship).

That organized bodies of physicians — most notably the American Medical Association — have devoted considerable attention to this subject is perhaps not sufficiently well-known. Six years ago, an editorial "Of Medical Ethics" appeared in these pages, beginning as follows:

> "When this writer was asked to provide a short discourse on medical ethics, he immediately sought to refresh his recollection of the standards of the American Medical Association. His own copy has disappeared, the libraries had none, and casual inquiry among likely people yielded nothing. It may be that some of our members are not on speaking terms with the principles which are supposed to guide their professional lives."[3]

The editor noted that an occasional study of the American Medical Association's code of ethics "would do us all good."

On the agenda of the American Medical Association's House of Delegates at the Annual Convention in June, 1978, in St. Louis, is a proposed revision of the *Principles of Medical Ethics* of the AMA. The amendments are intended "to modernize the language of the *Principles* and to clarify their meaning." Copies of the present principles can be obtained from our editorial office. The proposed new principles, reproduced in full below, seem to us to be sound and concise (suggestions are welcome, and should be addressed to Mr. Bruce Nortell, Secretary, AMA Judicial Council, American Medical Association, 535 N. Dearborn Street, Chicago, IL 60610).

PROPOSED NEW PRINCIPLES OF MEDICAL ETHICS

Preamble. These principles are intended to aid physicians in maintaining high standards of ethical professional conduct in their relations with patients, colleagues, members of allied professions, and the public.

One. The primary objective of the medical profession is to serve patients competently with full respect for their dignity.

Two. Physicians should strive continually to improve medical knowledge and skill and to make available to patients and colleagues the benefits of their professional attainments.

Three. A physician should not engage or participate in treatment which is not founded on a scientific basis.

Four. The medical profession should protect the public and itself against physicians deficient in moral character or professional competence. Physicians should observe all laws, uphold the dignity and honor of their profession, and voluntarily accept its self-imposed disciplines. Physicians should expose, without hesitation, illegal or unethical conduct of members of the profession.

Five. Physicians may choose when they will serve except in emergencies. Competent services should be provided and continued until the physician is discharged or services are discontinued after giving adequate notice: A physician should not attempt to obtain patients by deception.

Six. Physicians should resist restraints which interfere with medical judgment and skill or cause deterioration of the quality of medical care.

Seven. Physicians are entitled to be compensated fairly for personally providing or supervising the medical care of patients. A commission should not be paid nor accepted for the referral of patients.

Eight. A physician should seek consultation upon request or whenever it may benefit the patient.

Nine. A physician may not reveal confidences entrusted during medical attendance or deficiencies observed in the character of patients, unless required to do so by law or it becomes necessary in protecting the welfare of the patients or the community.

Ten. In addition to providing care to patients, the physician has a social responsibility to participate in activities intended to improve the health of the community.

Sixty-nine years ago, an Anderson, South Carolina physician wrote in these pages that "on the subject of medical ethics so much might be said, and so little known, that a whole course of lectures is needed."[4] We should feel fortunate that persons like Dr. Dolan are now providing such courses, and that organizations such as the American Medical Association continue to seek and to refine *practical and workable* codes. True, such codes are seldom cited in day-to-day practice; the seasoned clinician can nearly always resolve the big questions of "medical ethics" by his humane application of the Golden Rule. But the need for thoughtful, independent study of these questions is heightened by the increasing cost and complexity of medical care, and perhaps by the question: *whose* Golden Rule?

— CSB

REFERENCES

1. Edelstein L: The Hippocratic Oath: Text, Translation, and Interpretation. *Bull. Hist. Med.*, Supplement No. 1, 1943.
2. Veatch RM: Medical ethics. *JAMA* 239: 514-515, 1978.
3. Waring JI: Of medical ethics. *J South Carolima Med Assoc* 68: 26-27, 1972.
4. Duckworth JG: The relation of physicians to each other. *J South Carolina Med Assoc* 5: 18-20, 1909.

President's Page

PROGRESS

Last year about this time, Dessie Gilland passed along to me a legacy of goals and aspirations for the South Carolina Medical Association for the years to come. I would like to make a report to the Association on some of the progress we have made toward attaining these goals. They are listed below, with notes as to the outcome:

1. "Medicare-Medicaid Reimbursement — the Bureau of Health Insurance will probably present a reimbursement mechanism for our consideration, and perhaps we can study, recommend changes and even present to the House of Delgates for final ratification." **PROJECT COMPLETED — NEW REIMBURSEMENT SYSTEM — COMMITTEE HAS BEEN DISBANDED.**
2. "Department of Social Services — continue our recently established negotiations to become involved in the budget and decision-making stage of policy and regulations." **PROGRESS MADE.**
3. "Department of Health and Environmental Control — continue our negotiations to define personal health and public health and delineate areas of responsibility so as to cease competition and duplication, and thus reduce the cost of medical care and health care." **PROGRESS MADE.**
4. "Professional Liability Legislation — to stabilize this threat to health care in South Carolina." **PROGRESS MADE.**
5. "SCMA owned Mutual Liability Insurance Company — continue feasibility study." **STUDY PRESENTLY UNDER WAY BY AMERICAN HEALTH SYSTEMS, INC.**
6. "Disabled Doctors Plan — implement." NEW CHAIRMAN APPOINTED. **PROGRESS MADE.**
7. "SCMA structure and organization — study with AMA restructuring." **AMA SURVEY TEAM SURVEY REPORT WILL BE PRESENTED TO THE HOUSE OF DELEGATES THIS MONTH.**
8. "Council of SCMA — continue to study restructuring." **SEE SURVEY TEAM REPORT.**
9. "Rural Health Delivery Project — continue to implement its goals and objectives." **THE DELIVERY OF HEALTH CARE TO THE RURAL AREAS OF SOUTH CAROLINA WILL CONTINUE TO BE A MAJOR OBJECTIVE OF THE SOUTH CAROLINA MEDICAL ASSOCIATION.**
10. "Membership — every South Carolina licensed physician a member of SCMA." **THIS GOAL HAS NOT BEEN ACCOMPLISHED.**

These have been very difficult goals and objectives to attain in such a short period of time. I will pass the baton of leadership on to John Hawk, a very capable person. I feel if we can consolidate our gains and complete our already-started goals during the coming year, we will be in great shape; but John will need the help of every physician in South Carolina to insure the future of our profession. Once again, I will state that Unity is the answer to most of our problems. Number 10 above, as we can see, was a negative. Therefore, the supreme goal I will set for John Hawk and the SCMA for 1978-79 and the coming years is to enlist every practicing physician into the SCMA.

I will cherish what the past several years I spent working for the SCMA has meant to me, and I thank each of you for your cooperation and aid during the past year.

Waitus O. Tanner, M.D.
President

AUXILIARY PRESIDENT'S PAGE

1978 Convention Plans appear below. We hope each auxiliary member plans to attend and urge you to complete and return the pre-registration form. Look forward to seeing you in Myrtle Beach.

Elise Cain, President

1978 CONVENTION PLANS

The beautiful Myrtle Beach Hilton will be the headquarters of the fifty-fifth Annual Convention of the Auxiliary of the South Carolina Medical Association to be held at Myrtle Beach, South Carolina, Thursday, April 27 through Saturday, April 29, 1978.

Registration will begin on Thursday, April 27, from 3:00 p.m. to 8:00 p.m. The single auxiliary event scheduled on this day is the meeting of the Finance Committee at 4:00 p.m. in the President's Suite.

Registration on Friday, April 28, will be open from 8:00 a.m. until 5:00 p.m. Events featured on Friday will be a Continental Breakfast from 8:30 a.m. to 9:30 a.m. The Executive Board meeting will take place on Friday morning from 10:00 a.m. until 1:00 p.m. A hospitality room will be open during these hours for members who are not on the Executive Board. At 1:30 p.m. on Friday, April 28, auxiliary members will join their spouses at the Medical Alumni Luncheon.

On Saturday, April 29, the registration booth will be open from 8:00 a.m. until 1:00 p.m. The day's activities will begin with a Continental Breakfast from 8:30 a.m. to 9:30 a.m. The general membership meeting will be held on Saturday from 10:00 a.m. to 1:00 p.m., with the House of Delegates' business being conducted at this time. The highlight of the convention, the auxiliary luncheon honoring Past Presidents, will be held on Saturday, April 29, from 1:00 p.m. to 2:30 p.m. on the top floor of the Hilton in the lovely "Another World." Special guests will be Mrs. Hoyt (Rosa) Gardner, First Vice President of the AMA Auxiliary, and Mrs. Bruce (Eileen) Martin, President of the Southern Medical Association Auxiliary. A delicious seafood and wine luncheon with special table favors and door prizes will be featured.

Dr. Susanne Black, Convention Chairman, would like to emphasize the importance of pre-registration and early purchase of luncheon tickets. A pre-registration form appears below which should be completed and returned along with your check for $1.00 Registration fee and $10.00 for the luncheon. A Mystery Packet of surprises will be given to each registrant.

Please fill in this form and check the desired activities. Mail to: Mrs. J. O. Warren, S. 14th Avenue, Dillon, S. C. 29536.

Tickets will be held at the pre-registration desk during registration hours ONLY. This is necessary to make your convention a success.

NAME ______________________ FIRST NAME ______________________
ADDRESS ______________________ City ______________________ Zip __________
Check enclosed for $ ________ Registration fee $1 ( ) Membership Luncheon $10 ( )
Past State President ( )
Where staying at the Beach ______________________________________

ONE HUNDRED THIRTIETH ANNUAL MEETING SOUTH CAROLINA MEDICAL ASSOCIATION

APRIL 27 — APRIL 30, 1978
MYRTLE BEACH HILTON, MYRTLE BEACH, S. C.
GENERAL PROGRAM

Thursday, April 27

8:00 a.m.	Council Breakfast and Meeting — West Ballroom, Suite C
12:30 p.m.	Council Luncheon — West Ballroom, Suite C
2:00 p.m.	Council Meeting — West Ballroom, Suites A and B
3:00 p.m. - 8:00 p.m.	SCMA Registration and Exhibits Open — Lobby/Mezzanine

Friday, April 28

7:30 a.m.	Council and Reference Committee Chairmen Breakfasts — West Ballroom, Suites A-C
7:30 a.m. - 5:00 p.m.	SCMA Registration and Exhibits Open — Lobby/Mezzanine
9:00 a.m. - 12:00 NOON	House of Delegates Meeting — Center and East Ballrooms
10:15 a.m.	General Membership Meeting — Center and East Ballrooms
12:30 p.m.	SOCPAC BOARD MEETING — Parlour V
1:30 p.m.	MUSC ALUMNI LUNCHEON — East Ballroom
3:00 p.m. - 5:00 p.m.	STATE BOARD OF MEDICAL EXAMINERS HEARINGS — East Ballroom
3:00 p.m. - 6:00 p.m.	Reference Committee Meetings (Will be staggered) — West Ballroom, Suites A-C; and Parlours I-V
7:00 p.m.	RECEPTION/DINNER — 1938 MUSC REUNION — West Ballroom, Suite A
7:00 p.m.	RECEPTION/DINNER — 1923 MUSC REUNION — West Ballroom, Suite B
7:30 p.m.	STATE BOARD OF MEDICAL EXAMINERS RECEPTION/DINNER — East Ballroom

Saturday, April 29

7:30 a.m.	Council Breakfast and Meeting — West Ballroom, Suite C
7:30 a.m. - 5:00 p.m.	SCMA Registration and Exhibits Open — Lobby/Mezzanine
8:00 a.m.	MUSC ALUMNI BREAKFAST — Parlour V
9:00 a.m. - 12:00 NOON	STATE BOARD OF MEDICAL EXAMINERS SEMINAR & ENDORSEMENT MEETINGS — East Ballroom
9:00 a.m. - 1:15 p.m.	Scientific Session — Center Ballroom
1:15 p.m.	SOCPAC LUNCHEON — East Ballroom
7:00 p.m.	SCMA Annual Reception and Banquet — Center and East Ballrooms

Sunday, April 30

7:30 a.m.	Council and Reference Committee Chairmen Breakfasts — Parlours I-IV
9:00 a.m. - 12:00 NOON	House of Delegates Meeting — Center and East Ballrooms
12:00 NOON	Swearing in of new Officers followed by 10-minute, non-denominational service
12:30 p.m.	Council Reorganization Meeting — Center Ballroom
12:45 p.m.	S. C. Medical Care Foundation Annual Membership Meeting — Parlours I-IV

SCIENTIFIC PROGRAM

MYRTLE BEACH HILTON, MYRTLE BEACH, S. C.
APRIL 29, 1978

9:00 - 9:20	Reduction Mammaplasty	*Robert F. Hagerty, M.D.* Clinical Assistant Professor of Surgery M.U.S.C.
9:20 - 9:50	Psychiatric and Neurologic Side Effects of Antibiotics	*Allen H. Johnson, M.D.* Associate Professor of Medicine M.U.S.C.
9:50 - 10:10	New Techniques in Radiology	*Gerald M. Rittenberg, M.D.* Assistant Professor of Radiology M.U.S.C.
10:10 - 10:30	Newer Concepts in Medical Genetics	*Roger E. Stevenson, M.D.* Director Greenwood Genetics Center
10:30 - 10:50	Coffee Break	
10:50 - 11:10	New Developments in the Management of Acute Spinal Cord Injury	*Phanor L. Perot, M.D.* Professor and Chairman Department of Neurosurgery M.U.S.C.
11:10 - 11:40	Current Indications for Hysterectomy	*Edward J. Dennis, M.D.* Professor and Chairman Department of Obstetrics and Gynecology University of South Carolina School of Medicine
11:40 - 12:10	Intrascrotal Masses: Differentiation, Diagnosis and Management	*Stephen N. Rous, M.D.* Professor and Chairman Department of Urology M.U.S.C.
12:10 - 12:30	Chronic Pancreatitis	*Marion C. Anderson, M.D.* Professor and Interim Chairman Department of Surgery M.U.S.C.
12:30 - 1:15	The Continuing Search for the Causes of Human Cancer	*Albert B. Sabin, M.D.* Distinguished Research Professor of Biomedicine M.U.S.C.

ELECTIONS 1978

OFFICERS:

President-Elect
*First Vice President
*Second Vice President
*Secretary
*Treasurer (Nominated by Council)

COUNCILORS:†

(Three-year terms, no more than three consecutive terms)
District 1: A. Richard Johnston, Elected 1969
Re-elected 1972
Re-elected 1975
*District 4: J. Hal Jameson, Elected 1973 to fill unexpired term of Dr. Kilgore
Re-elected 1975
*District 7: Davis D. Moise, Elected 1975

AMA DELEGATE:

*Harrison L. Peeples
Present Term expires 12/31/78

AMA ALTERNATE DELEGATE:

*M. Ray Gillespie
Present Term expires 12/31/78

MEDIATION COMMITTEE:

(Three-year terms, no more than two consecutive terms)
*District 1: J. Ray Ivester, Elected 1975
*District 4: Anthony McAlister, Elected 1975
*District 7: T. Marion Davis, Elected 1975

BENEVOLENCE FUND:

(Three-year terms, no more than two consecutive terms)
*Wendell H. Tiller, Elected 1975

Need also to fill vacancy created when J. Gavin Appleby resigned. This vacancy not filled at the time due to possibility of transfer of funds.

STATE BOARD OF MEDICAL EXAMINERS:

*Fourth District: Charles N. Wyatt, M.D.
*At Large: William O. Whetsell, M.D.

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* Eligible for Re-Election.
† If the Tabled Report of the Ad Hoc Committee on Re-Districting passes, will need also to elect additional Councilor from Districts 1, 2 and 4.

REPORT OF THE SECRETARY

Several years ago the practice of your secretary not reporting to the House of Delegates became customary and therefore I did not submit a formal report last year. I have decided that as your Secretary it is my responsibility to report on my activities. It has been a privilege to serve you and a particular privilege to serve with 21 of the finest gentlemen in this state on your Council.

I would also like to thank Mrs. Joy Drennen, the recording secretary of Council whose diligence and dedication make my job very easy. The review of the activities of Council are simplified because of the expert way that she records and transcribes the minutes of Council and the Executive Committee.

This Association is strong and is now on a sound financial basis. It will grow even stronger when everyone realizes that we are dedicated in purpose to provide the best medical care possible to the citizens of this State thru a unified organization which represents you in every way, with the People, the state and the national government.

Sincerely,

Kenneth N. Owens, M.D.

REPORT OF COUNCILOR — SECOND DISTRICT

It has been my pleasure to serve another year as Councilor for the Second District of the South Carolina Medical Association. The activities of Council this year have been numerous, involved and very time-consuming. The decisions made by Council were not hasty but have been adequately debated and studied in depth. It has been my pleasure to have worked with a number of outstanding, dedicated and tireless colleagues on Council during this past year. I would also like to compliment the excellent staff of the South Carolina Medical Association for the superb work that they have done in carrying out the many activities of the association during this past year. This is certainly a dedicated and hard-working group of very fine people.

I attended Executive Committee Meetings of the Columbia Medical Society on occasions where I could contribute or answer any questions on the state level. The cooperation and participation by the members in the Second District have been excellent, and we are very pleased with their results. The membership in the Columbia Medical Society has continued to increase rather markedly.

I have served on the Subcommittee of Council on Legislation and Public Policy. I will not repeat the many legislative matters that were presented this past year as hopefully you are already familiar with them. Needless to say, they have required in-depth study and discussion. This will continue to be an active area in 1978.

I have also served on the Constitution and Bylaws Committee of the South Carolina Medical Association. I will continue on this committee this year. As a corollary to this, we had an AMA Survey Team meet with the Association and with Council this past year and have recently received their final report. There are going to be several areas of proposed change in the constitution and bylaws of our Association, and these will be presented in detail for further discussion and action at the forthcoming state meetings. The survey team spent many, many hours on this project, and I feel that it is going to be very beneficial to the entire associaton.

This past year the first class entered the University of South Carolina School of Medicine. I understand that over 700 applications for the 1978-1979 entering class have been received. Authorization has been requested to increase class size to 36; and in addition, the Admissions Committee is considering the possibility of admitting some transfer students if slots become available in the current class. I have been appointed a Clinical Assistant Professor of Surgery in the School of Medicine.

The educational programs at Richland Memorial Hospital have continued to expand. The hospital currently offers 14 clinical electives for seniors at the Medical University of South Carolina in Charleston. Residency programs are expanding as well. The hospital currently has 58 residents and expects to have 78 by July 1, 1978. In addition, Richland Memorial Hospital has recently been funded for a new residency in Emergency Medicine.

It is my hope that this past year has been one of progress for the Association and that all of us have benefited from the decision which Council has made. I will continue to serve my district and the Association to the best of my ability.

Respectfully submitted,
James H. Herlong, M.D.
Columbia, South Carolina

RESOLUTIONS TO BE PRESENTED AND VOTED ON AT THE ANNUAL MEETING

Submitted by: Horry County Medical Society
Subject: Seventy-two Hour Waiting Period for Sterilization of Medicaid Patients

WHEREAS, Congress in 1965 passed Public Law 89-97 establishing the Medicaid Program, and

WHEREAS, the Department of Health, Education and Welfare is the National Agency for its administration, and

WHEREAS, the S. C. Department of Social Services is the State Agency for its implementation, and

WHEREAS, certain rules and regulations are made by the Secretray of H.E.W., and

WHEREAS, there is now required in South Carolina a waiting period of 72 hours following request for sterilization by a Medicaid patient before a surgical procedure accomplishing same can be performed, and

WHEREAS, this time factor may be, on occasion, an interference with medical judgment, and

WHEREAS, such requirements upon a section of society may be, upon reliable legal opinion, a discrimination upon a certain class of citizens and is therefore unconstitutional; therefore,

BE IT RESOLVED, that the Horry County Medical Society voice its disapproval of this requirement by the Department of Social Services, and, therefore,

BE IT FURTHER RESOLVED, that this position be related to the SCMA at its next meeting of the House of Delegates and if they further substantiate this position that an appropriate Resolution be made to the American Medical Association at its next Clinical Congress to try to abolish this ruling at the national level.

REPORT OF THE EDITOR, JSCMA

Guided by your suggestions and criticisms, we have continued to attempt to publish in *The Journal of the South Carolina Medical Association* articles which might be uniquely relevant to our state's physicians.

Such articles include clinical reviews and items of social, political, or economic interest to South Carolinians. *The Journal* also exists, in part, as a place for practicing physicians in South Carolina to publish their observations. We continue to encourage such contributions, despite the trend for most articles to originate from universities or from state agencies.

Two "symposium" issues were published during the past year, one dealing with tuberculosis and the other dealing with hypertension. We welcome suggestions for topics for similar issues in the fuutre.

Printing and mailing costs rose 12 percent last year. Our approved 12 percent increase in advertising rates did not go into effect until January 1, 1978, due to a six-months rate protection plan. Total income for *The Journal* for 1977 was $26,611.41 (including the $6.00 subscription included in the dues for regular SCMA members, and $3.00 subscription for interns and residents). Total expenses were $29,119.93 (of which $24,600.46 were for printing and mailing). Thus, the deficit for 1977 was $2,508.52.

We feel that Joy Drennen of the SCMA office again did an outstanding job of putting together our publication each month. Any credit for *The Journal's* appearance is hers; any blame for *The Journal's* contents is the editor's.

Respectfully submitted,
Charles S. Bryan, M.D.

Librax®
Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Please consult complete prescribing information, a summary of which follows:

Indications: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:

"Possibly" effective: as adjunctive therapy in the treatment of peptic ulcer and in the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis.

Final classification of the less-than-effective indications requires further investigation.

Contraindications: Glaucoma; prostatic hypertrophy, benign bladder neck obstruction; hypersensitivity to chlordiazepoxide HCl and/or clidinium Br.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants, and against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Physical and psychological dependence rarely reported on recommended doses, but use caution in administering Librium® (chlordiazepoxide HCl) to known addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions) reported following discontinuation of the drug.

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy. Advise patients to discuss therapy if they intend to or do become pregnant.**

As with all anticholinergics, inhibition of lactation may occur.

Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude ataxia, oversedation, confusion (no more than 2 capsules/day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider pharmacology of agents, particularly potentiating drugs such as MAO inhibitors, phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions reported in psychiatric patients. Employ usual precautions in treating anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship not established.

Adverse Reactions: No side effects or manifestations not seen with either compound alone reported with Librax. When chlordiazepoxide HCl is used alone, drowsiness, ataxia, confusion may occur, especially in elderly and debilitated; avoidable in most cases by proper dosage adjustment, but also occasionally observed at lower dosage ranges. Syncope reported in a few instances. Also encountered: isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent, generally controlled with dosage reduction; changes in EEG patterns may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice, hepatic dysfunction reported occasionally with chlordiazepoxide HCl, making periodic blood counts and liver function tests advisable during protracted therapy. Adverse effects reported with Librax typical of anticholinergic agents, *i.e.*, dryness of mouth, blurring of vision, urinary hesitancy, constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diets.

ROCHE
Roche Products Inc.
Manati, Puerto Rico 00701

PATIENT PACKAGE INSERTS: A CONCEPT WHOSE TIME HAS COME?

The consumer's right to know is an irreversible and desirable trend of the Seventies. It extends, and properly, to a patient's right to know more about his or her prescription medications. One way, gaining favor, is through patient package inserts. Wisely-prepared and properly distributed when medically indicated, they could markedly improve patient knowledge and drug therapy—laudable goals by anyone's standards.

The PMA endorses these goals and will work with government, the health professions and consumers to achieve them.

The Advantages

The concept holds promise of benefits: better patient understanding of the product prescribed, better adherence to the treatment plan, and more awareness of possible side reactions.

Every doctor has had patients who fail to finish antibiotic regimens because they feel better. Some patients assume that if one tranquilizer or analgesic is good, two may be twice as good. Still others fail to report dizziness while on antihypertensive therapy—and so on.

Problems like these might arise less often if the patient received written information in addition to verbal instructions. Some studies suggest that patients are more receptive to such materials, and they more often understand the verbal instructions and follow them, when inserts are used.

The Disadvantages

There are also some potential problems. Obviously, the inserts must be clearly phrased, without extraneous or complex detail. How much information is enough? How can it be kept current? Should all patients receive the same information? Should inserts be included with all drugs? Should only potential problems be listed or are patients better off with a "fair balance" presentation that describes usefulness as well as drawbacks?

These and similar questions require answers, since model inserts have yet to be properly developed and tested. Despite the need for these studies, the FDA is proceeding prematurely with inserts on selected products. We think the Congress is the only place where the matter can be given the proper legal status and direction, particularly since it represents a conceptual change in the legal, medical and social framework of the nation's prescription drug information system.

The Solution

The PMA believes that carefully-devised pilot studies of various kinds of inserts are needed. They should be developed and implemented with full participation by doctors, pharmacists, consumers, communications experts and the drug industry. Such studies will provide reliable pathways to follow, so that inserts will be useful aids to medical practice.

And particularly we think that you should be closely involved in this debate and in these studies and decisions. Otherwise, people with less experience and qualifications may control the purposes, content and use of a tool with considerable promise for improved patient care. It could make a difference in your practice tomorrow, and more importantly, in the health of your patients.

PMA
THE PHARMACEUTICAL MANUFACTURERS ASSOCIATION
1155 FIFTEENTH ST., N. W., WASHINGTON, D. C. 20005

PREVIOUSLY TABLED AMENDMENTS TO THE CONSTITUTION

The following proposed Amendments to the Constitution of the South Carolina Medical Association will be taken from the Table and voted on at the next Annual Meeting of the House of Delegates, April 27-30, 1978 at the Hilton Hotel, Myrtle Beach, South Carolina, to wit:

CHANGE: Article III, paragraph to become A. and read as is.

ADDITION: Article III, paragraph B. to read: "Component specialty societies shall consist of any specialty medical groups that are recognized by the AMA, that are organized, have elected officers and have received approval of the Council of the South Carolina Medical Association;"

CHANGE: Article V, Section 1. to become Section 1. (a) and read as is.

ADDITION: Article V, Section 1. (b) to read: "One delegate elected by each of the component specialty societies which are recognized by the SCMA. The delegate must be a member of the SCMA;"

CHANGE: Article V, Section 1. (4) to read: "the immediate two past presidents of the Association whose legal residence is in South Carolina;"

CHANGE: Article VI to read: "and the President of the State Board of Medical Examiners of South Carolina, provided he is a member of the South Carolina Medical Association,"

CHANGE: Article VI pertaining to COUNCIL will require drafting and change to implement the recommendations presented in the Ad Hoc Committee on Re-Districting Report of April, 1977, approved in principle by the Reference Committee on Council and Officers, and tabled by the House of Delegates at the SCMA Annual Meeting in 1977 in the following format: "That there be two Councilors representing each District in which 300 or more members of the SCMA are enrolled. One Councilor must come from the metropolitan area and one Councilor must come from the rural area. (At the present time, this will increase the Council by three.) That a 'metropolitan area' be defined as 'a County Medical Society with 200 or more SCMA members.' That a District having more than 300 members, but not having 200 members in a County Society, would have two Councilors; but not from the same County Medical Society."

CHANGE: Article XIII to read: "any regular meeting . . . eleven months prior in an open meeting of the House of Delegates, and that it shall have been sent officially to each component county society at least two months before the meeting at which final action is to be taken."

CHANGE: Article IX, Section 2. to become Section 2. (a) and read as is.

ADDITION: Article IX, Section 2. (b) to read: "Qualification for president-elect will be determined as follows: One must have participated in the SCMA seven (7) out of the last ten (10) years in one or more of the following capacities: (1) as a delegate to the SCMA House of Delegates, (2) or as an elected official, (3) or as a member of Council, (4) or as Chairman of a Standing or Special Committee."

CHANGE: Article IX, Section 5. to read: "Councilors shall be elected for a term of two years, but no Councilor shall serve for more than three consecutive terms, and the elections should be staggered so that members of Council be elected yearly, with Councilors from odd-numbered Districts being elected in odd-numbered years, and Councilors from even-numbered Districts being elected in even-numbered years."

SOUTH CAROLINA MEDICAL CARE FOUNDATION ANNUAL REPORT TO THE MEMBERSHIP

The South Carolina Medical Care Foundation has continued its outstanding growth and record of accomplishment during this report period.

Foundation membership totals 2,060 South Carolina physicians. SCMCF's central office staff and field operations employ over 65 persons in full and part-time positions, with an operating budget in excess of 1.6 million dollars.

Health care administrative programs — the "backbone" of the Foundation's operations — have been further expanded. In addition to PSRO Acute Care and Long Term Care Review Programs, SCMCF — in January — implemented review for CHAMPUS (Civilian Health and Medical Program of the Uniformed Services) services to beneficiaries in South Carolina. The S. C. Department of Social Services (DSS) contracted with SCMCF in July of 1977 to perform Medical Review and Independent Professional Review for Medicaid recipients in South Carolina. Revisions brought about by the passage of H.R. 3 will entail PSRO Long Term Care performing a monitoring role for the Medical Review — improving overall review capacity and reducing duplicate functions of the Long Term Care (PSRO) and Medical Review Programs.

Complementing the Foundation's basic programs are new contracts and programs of a special project nature. Successfully completing its first contract for the State Budget and Control Board, Division of Research and Statistical Services, SCMCF provided data comprising 80% of South Carolina's 1976 hospital discharges (Federal and Non-Federal) to DRSS's subcontract with the National Center for Health Statistics for a Hospital Care Information Component to the South Carolina Comprehensive Health Statistics System. As a result of its successful completion and developed contacts in and with South Carolina hospitals, DRSS has again awarded the subcontract for 1978 data acquisition to the Foundation. This 15-month subcontract, through March, 1979, exceeds $95,000.

Twelve (12) South Carolina hospitals have contracted with the Foundation for review of non-federal cases under SCMCF's newly developed All-Patient Review Program. Under new JCAH standards, facilities must review a sample of all cases for accreditation purposes. SCMCF's new program offers that service in conjunction with its existing review programs at substantial time, manpower and cost savings to participating and eligible hospitals.

In addition, SCMCF's office of Special Projects has responded to an Ambulatory Care Data Proposal from the Division of Research; and, a RFP (Request for Proposal) from DHEW for an administrative project.

SCMCF has effectively and efficiently demonstrated its capacity to perform. Evidence of this, regionally and nationally, can be seen in articles and reviews, and programs and consultations requested of our staff. On the local level, we have been instrumental in many organizational activities and our data experience and review capabilities are becoming widely accepted as the standard in South Carolina.

SCMCF and Yale University's joint venture to test the utility of an advanced computer system has developed effectively and is now complementing the Foundation's efforts in participating in a joint endeavor with SCMA to process our own data and meet our burgeoning data needs with SCMCF capability.

All of the aforementioned activities are a result of many hours of dedicated time and service from your fellow physicians in South Carolina. The decision of the Foundation Board and the effective and efficient function of the Administrative Staff are only possible through the continued cooperation and interest of the Foundation membership.

The health care administration programs and special projects the Foundation has implemented and managed these past several years is your commitment to improving the quality of medical care and its delivery in South Carolina.

On behalf of the Board and Administrative Staff, your commitment will be kept, with your continued support, cooperation, and direction.

Respectfully Submitted,
Kenneth N. Owens, M.D.

COMMITTEE REPORTS

RURAL HEALTH DELIVERY COMMITTEE

The Rural Health Delivery Project (RHDP), co-sponsored by the South Carolina Medical Association and the South Carolina Hospital Association has just completed its second year of operation. The RHDP's Physician Recruitment, Referral, and Placement Program (PRP) has remained the primary focus of the Project's activities. Through the direct or indirect efforts of the PRP Program, twenty-one (21) known placements of physicians have taken place in the last year. Staff is in the process of purging its physician files and should be able to verify additional placements in the near future.

At the direction of the Project's Steering Committee, a basic registration fee for both physicians and opportunities was initiated in late May of 1977. Seventy-seven (77) physicians and thirty-seven (37) opportunities have registered with RHDP since that time generating $2,850 in fees. With the reregistration of all statewide opportunities and with an increased physician enrollment, the annual fee should produce even more revenue in the coming year.

The following is a statistical analysis of the PRP Program as of January 1, 1978.

Physician Listings

In the last year, the RHDP has been in contact with over four hundred fifty-two (452) physicians. Approximately half of the contacts originated from letters to the SCMA; one fourth from the AMA's physicians' listings; the rest from the Board of Medical Examiners, phone calls, and advertisements in journals. Of these contacts, one-hundred sixty-five (165) have listed their availability with RHDP. Those registering with RHDP in the last calendar year were obtained from the following sources:

Letter	108
AMA	33
BME	5
Phone	16
Ads	4
Total	166

Physicians by Specialty

Of the physicians currently listed with RHDP the specialties represented are as follows:

Anesthesiology	7
Cardiology	1
Cardiovascular Dis.	2
Dermatology	1
Emergency Room	4
Family Practice	11
Gastroenterology	7
Geriatrics	1
General Practice	4
Internal Medicine	27
Neurology	1
Ob/Gyn	17
Occupational Med.	1
Ophthalmology	6
Otolaryngology	3
Pathology	6
Pediatrics	12
Physician Med.	1
Psychiatry	2
Public Health	1
Pulmonary Diseases	5
Radiology	4
Surgery-General	24
Surgery-Orthop.	1
Surgery-Plastic	1
Surgery-Urological	4
Surgery-Vascular	2
Urology	10

Types of Practice Desired (1st Choice)

Solo	41	24%
Single-group	29	18%
Institutional	13	8%
Industrial	3	2%
Public Health	2	1%
Partnership	47	28%
Multi-group	24	15%
Academic	5	3%
Administrative	2	1%

Age

20 - 30:	43	26%
31 - 40:	84	50%
41 - 50:	19	11%
50+:	20	12%

Board Certified: 81

Board Eligible: 85

State of Origin

New York	31
New Jersey	16
South Carolina	15
Pennsylvania	13
Ohio	12
Michigan	8
Maryland	7
North Carolina	7
Florida	6
Georgia	4
Illinois	4
Indiana	4
Massachusetts	4
West Virginia	4
Alabama	3
Kentucky	3
Texas	3
Virginia	3
California	2
Louisiana	2
Minnesota	2
Tennessee	2
Connecticut	1
Mississippi	1
Kansas	1
Utah	1
Washington	1
Wisconsin	1
Canada	1
Puerto Rico	1
Canal Zone	1

Areas Desired

Upstate	15
Midlands	8
Pee Dee	15
Low Country	25
No Preference	103

Opportunity Listings

Total Current Opportunities:	110
Total Specialties Registered:	202
Total No. of Towns Registered:	62

Regional Breakdown

Upstate:	26 Opportunities 55 Specialties 13 Towns
Midlands:	30 Opportunities 63 Specialties 16 Towns
Pee Dee:	35 Opportunities 51 Specialties 19 Towns
Low Country:	18 Opportunities 32 Specialties 13 Towns
Aiken:	1 Opportunity 1 Specialty 1 Town

Opportunities Registered — Community Size

— - 2,500:	5	4%
2,600 - 9,000:	18	16%
10,000 - 24,000:	34	32%
25,000 - 49,000:	20	18%
50,000 - 99,000:	8	7%
100,000 + :	25	23%
Total	110	100%

Type of Facility Registering Opportunity

Hospital:	29	26%
Physician:	56	51%
Other:	25	23%
Total	110	100%

Known Placements in 1977

Specialty	*Location:*
Anesthesiology	Georgetown, S. C.
Family Practice	W. Columbia, S. C. Calhoun Falls, S. C. Calhoun Falls, S. C.
Gastroenterology	Columbia, S. C. Florence, S. C.
General Practice	Latta, S. C.
General Surgery	Spartanburg, S. C. Lancaster, S. C. Anderson, S. C. Orangeburg, S. C.
Internal Medicine	Greenville, S. C. Univ. of S. C., Col. Johns Island, S. C.
Ob/Gyn	Darlington, S. C. Abbeville, S. C.

Ophthalmology	Hilton Head, S. C.
Pediatrics	Columbia, S. C.
Psychiatry	Georgetown, S. C.
Radiology	Greenville, S. C.
Urology	Chester, S. C.

Harrison L. Peeples, M.D., Chairman
Rural Health Delivery Project Steering Committee
Donald G. Kilgore, M.D., Chairman
Rural Health Delivery Committee

COMMITTEE ON HISTORICAL MEDICINE

The members of this committee join all South Carolina physicians in mourning the death of Dr. Joseph Ioor Waring, our chairman.

This committee has been relatively inactive in recent years, as noted in Dr. Waring's report last year. The SCMA Evaluation Survey, conducted by the American Medical Association, August 2-4, 1977, recommended that the "limited activities of this committee should be transferred" to the editorial board of *The Journal.*

We suggest three alternatives which might be considered by the SCMA council:

1. The Committee on Historical Medicine could be continued in its present form, with the appointment of a new chairman to succeed the late Dr. Waring.
2. The Committee could be expanded to include, or its activities absorbed into, other organizations such as the Waring Library Society and the South Carolina Historical Society.
3. The functions of the committee could be transferred to an editorial board, to be created for *The Journal.* Such an editorial board could include one or possibly two SCMA members with a special interest in historical medicine.

Respectfully submitted,
Charles S. Bryan, M.D. (for the Committee)

MEMORIAL COMMITTEE

Some of our colleagues who have been friends of us and to thousands of patients have answered their last call since we met together last May. I am sure that we all agree that it is appropriate that we pause at this time to give thanks to Almighty God for the lives of those of our departed friends and colleagues: Dr. Elmer W. Long, Newberry; Dr. Percy Hay, Jr., Florence; Dr. Prentiss M. Kinney, Bennettsville; Dr. James O. Dunlap, Rock Hill; Dr. Walter J. Bristow, Sr., Columbia; Dr. Henry S. Jordan, Anderson; Dr. Wesley J. Snyder, Jr., Sumter; Dr. Grover C. Sheppard, Jr., Fort Mill; Dr. William H. Lee, Jr., Charleston; Dr. Carl J. Geiger, Jr., Charleston; Dr. E. W. Long, Newberry; Dr. Joseph I. Waring, Charleston; Dr. Curtis P. Artz, Charleston; and Dr. William Harrison Williams, Rock Hill.

Harold P. Hope, M.D., Chairman

IMPAIRED PHYSICIAN'S COMMITTEE

The Impaired Physician's Committee is in its formative stages. Several meetings with Legal Counsel and the SCMA Staff have been held to formulate the type role such a committee should pursue. As Chairman, I have had dialogue with the Board of Medical Examiners, The S. C. Commission on Alcohol and Drug Abuse and the Columbia Medical Society's Committee on The Impaired Physician.

From information and data obtained during these discussions it is our present thinking that the Committee's role should be a supportive advocate one. Any coercive measures should be handled by the existing Board of Medical Examiners.

Some thought has been given to establishing a crisis intervention "Hot Line" service. This would be a 24-hour telephone at the state office to provide suggestions and information for crisis problems.

I am in hopes of making contacts with other committees around the state and hopefully to interest the respective auxiliaries in our efforts.

S. Hunter Rentz, Chairman

MEDIATION COMMITTEE

The South Carolina Medical Association Mediation Committee has held four meetings this past year with two of these since the Mid-Winter Meeting. The disposition of the complaints still open, and new ones received since our last report, is as follows:

1. *A complaint against a non-SCMA member alleging improper treatment.* The committee felt the treatment rendered by him was proper, and the complainant was so advised along with an explanation of our findings.
2. *The complaint by a county medical society against an HMO alleging solicitation of patients was considered at length.* Although the group offered to meet with us if we would go to them, the Mediation Committee felt it would be prudent to close the case on advice of counsel, for the following reasons: (a) unless solicitous statements can be related to specific physicians, nothing legally can be done; (b) it is not unethical for a health care organization to advertise to impart information to the public.
3. *An allegation of improper treatment by the daughter of a patient who died with a long-existing malignancy.* The case was evaluated by the local medical society, but their report was rejected by the complainant. A review by our committee was requested. Our findings were similar to those of the local medical society, and the daughter was so advised.
4. *A complaint from a mother alleging her son had been getting amphetamines for over a year from a physician.* She described her son's deteriorating health, and requested our investigation. The complaint was turned over to the South Carolina Board of Medical Examiners, and is currently under investigation.
5. *The Editor of a local Medical Journal requested an opinion concerning an Association member.* This was given.

In addition to the above, three cases were closed because of lack of information and failure of response of the complainant. Ten complaints were referred to local medical societies with functioning Grievance Committees.

The inter-professional code of conduct approved by the South Carolina Medical Association House of Delegates at the last Annual Meeting has had no formal action yet by the South Carolina Bar Association.

Council requested the Mediation Committee to reconsider its previous statement on doctors dispensing drugs from their offices, and adopt the language of the AMA's Judicial Council. After securing information from several sources within the state, as well as the Legal Department of the AMA, this matter was interpreted by us as follows: (a) that basically the idea of having a registered Pharmacist working in conjunction with an HMO might be deemed acceptable pharmacy procedure and is preferred to dispensing drugs from an office where no records are kept and/or a profit is derived from their sale; (b) inasmuch as there is no basic change in the new judicial opinion on this subject, we feel that no reprint regarding the dispensation of drugs is necessary at this time; (c) it is the feeling of the Mediation Committee that the dispensation of drugs from a doctor's office is ethical so long as there is no exploitation of the patient.

Respectfully submitted,
Boyce M. Lawton, Jr., M.D., Chairman,
SCMA Mediation Committee

INSURANCE COMMITTEE

The South Carolina Medical Association Insurance Committee has not held any formal meetings under my chairmanship; however, this does not indicate an absence of activity in the insurance area.

Recently, there have been three (3) major insurance areas receiving the very special attention of the Executive Committee of the Council and the SCMA Insurance Committee Chairman. In most cases, due to either the lack of time available or to the delicate nature of the items to be considered, the Executive Committee of the Council has held the necessary meetings and followed through on insurance activities with the knowledge and consent of the Insurance Committee. It appears that some very significant advances have been made with the insurance industry, advances that should prove to have very positive, long-range effects on the South Carolina Medical Association members and the physicians of South Carolina as a whole.

A very major breakthrough achieved recently will deal directly with the physician disability insurance problem and also with office overhead protection. The Association has been actively pursuing an insurance carrier who would be willing to come into South Carolina and "pick up" the physician's disability program which was dropped some months back by the Educators Mutual Insurance Company. Action has been taken by the South Carolina Medical Association that will insure the availability of disability coverage to all physicians across the state, no matter what their age. It also appears that the South Carolina Medical Association will, through a greatly refined and improved insurance program, be able to offer to the membership and their employees a more comprehensive, economical life, accident, property and casualty insurance package. In addition to the life, property and casualty insurance problems which hopefully have been solved, the professional liability insurance situation in South Carolina has received a tremendous amount of attention recently. I am optimistic that by the date of our Annual Meeting, additional sources of professional liability insurance will be available to the physicians of South Carolina. All indications point toward a more competitive commercial marketplace in South Carolina for professional liability insurance coverage, a marketplace that will be more responsive to the physicians' needs.

I am sure that due to the heavy involvement of the Executive Committee of the Council, additional information and details concerning both of the above-listed accomplishments will be included in Halsted M. Stone, M.D., Chairman of the SCMA Council's Report to the House of Delegates, as well as in the Report of the SCMA Professional Liability Committee.

I am also pleased to report on recent changes in the South Carolina Medical Association's Blue Cross and Blue Shield health insurance program. Last year, after a rather large rate increase by Blue Cross and Blue Shield, it was suggested by many members that the Association pursue health insurance coverage with a full benefit program, yet with an affordable deductible and lower monthly premiums. Such a program was developed and implemented this year by Blue Cross and Blue Shield for the South Carolina Medical Association. The Insurance Committee feels that this newly developed health insurance program will greatly complement our existing full benefit, first dollar payment program, allowing the South Carolina Medical Association membership a true choice as to the health insurance program most suitable to their individual needs.

Respectfully submitted,
Daggett O. Royals, M.D., Chairman

COMMITTEE ON INDUSTRIAL MEDICINE

"It shall be the duty of this Committee to study matters pertaining to occupational health in South Carolina and to advise the South Carolina Medical Association of any new developments in this field. It shall also serve as the liaison committee to the South Carolina Industrial Commission."

This Committee has been involved in the following activities during 1977-78:

1. The first meeting was an organizational meeting in which Allen R. Slone, M.D., was reaffirmed as Chairman; William J. Goudelock, M.D., was elected Vice Chairman; and Ed Shmunes, M.D., was elected Secretary/Treasurer of the Committee.
2. This Committee continually updates the Fee Schedule for Physicians on Workmen's Compensation cases. The new edition of the Fee Schedule will be published in loose-leaf notebook form for easy additions and deletions to this Schedule. The South Carolina Industrial Commission will publish the new Fee Schedule in the fall of 1978. Effective March 1, 1978, the Conversion Factor for Medical and Surgical Services will be changed from 8 to 9; the Conversion Factor for the Total Radiological Services will be changed from 7 to 8; Professional Components for Radiological Service will be 1.5; and Anesthesiological Services are changed from 8 to 9 for physicians and 5 to 6 for nurse anesthetists. Other changes have been published by the South Carolina Industrial Commission and mailed to physicians in South Carolina.
3. Two dinner meetings have been held with the Industrial Commission. The Committee on Industrial Medicine has learned that there is a marked improvement in the relationship between physicians over the State and the Industrial Commission.
4. The Committee has recommended Lynn Derrick, M.D., Columbia Ophthalmologist; George McLean, M.D., Columbia Plastic Surgeon; Ben N. Miller, M.D., Columbia Internist; and William Barr, Columbia General Practitioner, to work with David Holler, M.D., as consultants to the Industrial Commission. These physicians have been approved by the Industrial Commission.
5. David Holler, M.D.; David Baxley, M.D.; and Allen Slone, M.D., of this Committee have been appointed to the Steering Committee that sets the tone and direction of the program format for the Annual Educational Conference sponsored by the South Carolina Industrial Commission.
6. This Committee recommends the change in the name of this committee from Industrial Medicine to Occupational Medicine, and the Committee should be known as the Occupational Medicine Committee of the South Carolina Medical Association.
7. This Committee is in agreement with and is working with the South Carolina Industrial Commission to abolish the Medical Advisory Panel as now appointed by the Governor on the recommendation of the Executive Committee of the South Carolina Medical Association. It is the feeling of this Committee and the full Industrial Commission that the Medical Advisory Committee was not properly appointed and that it is no longer a useful group to the Industrial Commission. The Committee on Industrial Medicine will furnish medical information to the South Carolina Industrial Commission and act in an advisory capacity on occupational diseases.

Respectfully submitted,
Allen R. Slone, M.D., Chairman

COMMITTEE ON CONSTITUTION AND BY-LAWS

The Tabled Amendments to the Constitution to be voted on by the House of Delegates at the 1978 Annual Meeting of the SCMA are shown elsewhere in this issue of *The Journal*.

The SCMA Committee on Constitution and By-Laws met on Sunday, March 5, 1978, to consider the AMA Survey Team's Evaluation Report of the SCMA. After a review of the AMA Report, the Committee would like to make the following recommendations to the SCMA House of Delegates:

1. The Survey Team recommended that the General Meeting at the Annual Meeting of the House of Delegates as provided for in Article XI, Section 1 and Article XIII of the Constitution should be eliminated. After much discussion, the Committee unanimously endorsed the existence of the General Meeting and desires that it be maintained.
2. The Survey Team recommended in Article XIII of the Constitution that the required ⅔ vote for amendments be changed to "accepted by a majority vote." The Committee feels that a ⅔ vote is adequate for Constitutional amendments and should be retained. Attention will be directed to defining meeting quorums throughout the Constitution and By-Laws for consistency and clarity.
3. Chapter VIII of the By-Laws will be reviewed and rewritten for clarification.

The Committee on Constitution and By-Laws approved in principle the Committee/Commission system as set forth by the AMA Survey Team with the following changes:

1. That the Committee on Long Range Planning be a standing Committee of the Council; and
2. That the Committee on Relationships with the DHEC be renamed to the Committee on Public Health.

Substantial changes to the SCMA Constitution and By-Laws are scheduled for presentation by the Committee at the 1978 Mid-Winter Meeting.

John C. Beard, Jr., M.D.
Chairman

CONTINUING EDUCATION COMMITTEE

Members of the SCMA Continuing Education Committee are: Vince Moseley, M.D., Chairman; N. B. Baroody, Jr., M.D.; William S. Brockington, M.D.; John W. Brown, M.D.; Laurie N. Ervin, M.D.; J. G. Halford, M.D.; C. B. Hanna, M.D.; M. G. Howle, M.D.; William Klauber, M.D.; E. Mims Mobley, Jr., M.D.; C. W. Brice, Jr., M.D.; Raymond Ramage, M.D.; Frank R. Wrenn, M.D.; Charles H. Frenzel; and Roderick MacDonald, M.D.

February 24, 1977 — The Committee recommended accreditation of the Annual Scientific Program of the SCMA for 4 hours Physician Recognition Award Continuing Education Credits.

June 20, 1977 — A Continuing Medical Education Questionnaire was sent out by the Chairman of the SCMA Continuing Medical Education to all practicing physicians in South Carolina. It was hoped that by this questionnaire that the Education Committee of the SCMA would find the most efficient and effective ways of developing continuing education programs.

October 12, 1977 — The Committee met at 5:00 P.M. in Columbia at a Conference Room of the SCMA. The following recommendations and concerns were to be submitted to Council at the Mid-Winter Meeting of the SCMA.

The South Carolina Committee has participated with the other Chairmen of Continuing Medical Education of the several United States, Guam, Panama Canal Zone, District of Columbia and Puerto Rico. It is our belief and concern that in the new Liaison Committee for Continuing Medical Education, for which the American Medical Association is a minority in representation, that the State Medical Associations and their continuing medical education efforts are not adequately represented. Currently, the representatives of the Liaison Committee of Continuing Medical Education, which is under the aegis of the American Association of Medical Colleges, has the following representatives:

American Board of Medical Specialties	3
American Hospital Association	3
American Medical Association	4
Association for Hospital Medical Education	1

Association of American Medical Colleges	3
Council of Medical Specialty Societies	3
Federation of State Medical Boards	1
Public	1
Federal	1

The Council of State Committees of Continuing Medical Education have expressed the following concerns:

1. Many practicing physicians are more dependent on their State Medical Associations to represent them in matters pertaining to continuing medical education than they are dependent or available to express themselves through the American Medical Association. The State Continuing Medical Education Committees are experienced in continuing medical education activities but do not believe that the present Liaison Committee is adequately structured to reflect their views or concerns. It is believed, that on a rotating basis, to provide adequate representation of the practicing physicians throughout the United States and its territories, that the Committee should be structured to include at least three representatives from the organization of the State Continuing Medical Education Committee Chairmen as representatives.

   The SCMA Committee has met with staff and representatives of the South Carolina Medical Care Foundation and its PSRO Office. The Committee believed that there is need to receive information through this source as to areas of educational need, and they are prepared to encourage program development to meet these. The Committee believed that this should be related to regional or district needs and that programs should be developed along these lines. The programs should have objectives for improving patient care as evidenced by studies provided through the PSRO with full confidentiality and anonymity.

The Committee wishes to stress that CME Programs should be based on identified needs or requests by physicians and that associated with the program, some type of evaluation should be included in each identifying what the participating physician, expect to gain by attending, has he gained information desired, and more importantly, a follow up as to his later use of this in his practice. This will require inquiries, pre and post program comments and cooperation from registrants in responding to follow up evaluation, references and access to library materials for later use, and the availability of these should be properly publicized by those with such materials for hospitals, medical societies and the two State Medical Colleges.

The Committee believes that continuing medical education should be arranged by professional bodies and the large number of commercially developing groups developing such programs do not really reflect the sort of needs and objectives which pertain to the local or regional practicing physicians.

The Committee is actively studying ways by which the smaller hospitals and more isolated practitioners in the smaller communities can be assisted in order to remove the burden of time lost from offices and patient care in efforts to obtain continuing medical education.

The Committee has reviewed the recent publication, *Essentials for Accreditation of Institutions and Organizations Offering Continuing Medical Education Programs,* as recently issued by the Liaison Committee on Continuing Medical Education and wish to call attention to the following statements in this document:

1. The aim of CME is improved health care of the patient and to bring to the practicing physician new medical knowledge, permit professional growth, augment initial education, strengthen the habits of inquiry and judgement, and correct out-dated knowledge. Single short courses or brief programs will not be able to meet all of these objectives.
2. CME Programs should be responsibly administered with cooperation by the hospital DMEs, Medical College faculty and local physicians in planning and conducting such programs. Some type of regional or district plan in continuing medical education should be established to develop adequate programs.
3. Programs should be supported by an appropriate budget.
4. Where resident training programs exist, these supporting staffs and residents should be brought into conducting of CME programs.
5. The subject matter should be designed to provide in-depth information on one or a

group of closely related subjects rather than various non-related topics.

6. Programs should be subject to continuous re-appraisal.
7. Questionnaires, pre-course and self-assessment tests are recommended.
8. Facility should be adequate and, where possible, conferences should be related to hospital teaching and smaller groups rather than lecture or panel discussions. Emphasis should be upon problem solving so that students are active and not passive. Purely didactic methods are considered to be inferior.
9. The use of self-study educational aids of all types in addition to reading materials should be encouraged.
10. Certificates indicating completion of continuing education courses must not resemble a diploma or attest to a special skill.
11. Consideration for maintenance of membership in medical societies or hospital staff privileges should include evidences of regular participation in continuing medical education.

The Education Committee requests the House of Delegates to register with the AMA Committee on Medical Education and its representatives to the LCCME its sentiments which are in concurrence with those expressed by the Council of State Committees of Continuing Medical Education in respect to the need of representatives from the State Committees to be on the LCCME.

The Education Committee also requests the House of Delegates to carefully consider the other items in this report and provide us with an expression of endorsement and support.

November 28 and 29, 1977 — The Site Visit Team from the Committee visited the McLeod Memorial Hospital in Florence, South Carolina and recommended they be accredited for Category I AMA Physician's Recognition Award Credit for three years and re-evaluation at the end of the third year.

December 3, 1977 — Chairman of the SCMA Continuing Medical Education Committee met in Chicago, Illinois for a National Meeting of Continuing Medical Education Chairmen.

Vince Moseley, M.D., Chairman

COMMITTEE ON LEGISLATIVE ACTIVITIES

The Committee on Legislative Activities has worked actively during the 1978 Session of the General Assembly on legislation of interest to SCMA.

The Committee on Legislative Activities has reviewed all bills introduced in the General Assembly and determined SCMA's position and action on those which are health related, or of other interest to the Association. Presently, the Committee on Legislative Activities is monitoring and making input on more than forty active bills on which SCMA has adopted a position. SCMA testimony has been provided to numerous committees and sub-committes on these bills.

Doctor of the Day Program — SCMA members have been serving daily at the Capitol in the Doctor of the Day Program, providing a service to legislators, and good publicity for SCMA. Every applicant has been scheduled to serve this year.

Legislative Dinner — SCMA sponsored the very successful dinner honoring the Medical Affairs Committees of the House and Senate. Many SCMA members and legislators were in attendance. This affair was greatly appreciated by the legislators in attendance.

Physician Contacts — SCMA is developing a grass-roots system of "key-man" contacts with legislators. At present, more than 300 physicians have been identified who have a good relationship with one or more legislators, and who can contact these legislators to present SCMA's views on vital legislative issues. This list of physicians provides at least one M.D. contact for more than two-thirds of the members of the General Assembly. With the continued assistance of the local medical societies, SCMA hopes to have key-men identified for every legislator after the 1978 elections.

SCMA representatives have been meeting with local societies to discuss pending legislation, and to urge individuals to participate in SCMA's legislative program. In addition to identifying key-men contacts, SCMA is presenting the message that every physician, as a constituent with much at stake in the legislative process, should work actively with his legislators.

Legislative Seminar — Dates and plans for a SCMA sponsored legislative seminar should be determined soon.

D. Strother Pope, M.D., Co-Chairman
John W. Brown, M.D., Co-Chairman

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MEDICAL ADVISORY COMMITTEE

The Medical Advisory Committee to the Vocational Rehabilitation Agency met Thursday, February 16, 1978, at the Carolina Town House in Columbia, South Carolina. Dr. Ben N. Miller, Chairman, presided. Members of the committee present were: Dr. Alec E. Brown of Columbia, Dr. Robert S. Clarke, Jr. of Due West, Dr. James G. Halford, Jr. of Anderson, Dr. Basil Manly, IV of Greenville, and Dr. Braxton B. Wannamaker of Charleston. Dr. Alec E. Brown represented the South Carolina Dental Association.

Vocational Rehabilitation Agency was represented by: Mr. Joe S. Dusenbury, Commissioner, Dr. Robert E. Brabham, Assistant Commissioner — Field and Case Services; Mr. T. E. Ringer, Jr., Assistant Commissioner — Administration and Special Services; Dr. Charles S. Chandler, Supervisor — Research and Planning; Mr. George L. Cleckler, Supervisor — VR-PS and Youth Services; Mr. Larry M. Harrelson, Program Specialist; Mr. Walter J. House, Case Service Audit Supervisor; Dr. William E. Middleton, Supervisor — Workshops and Facilities Division; Mr. Vincent Rhodes, Jr., Program Specialist; Mr. Raynold Stoudemayer, Acting Supervisor — Rehabilitation Services Division; and Mr. Rick Vandiver, Acting Director — Disability Determination Division.

Mr. Dusenbury was presented and expressed Agency appreciation for guidance from the Committee and the overall cooperation from the medical profession. He indicated that in an election year, such as this, much is presented by the news media, some of which could be controversial and even critical to state agencies. He urged committee members to contact the Agency personnel if they have concern, or would like clarification of news releases. He further indicated that Vocational Rehabilitation Agency is anxious for suggestions from the committee members.

The Agency feels that the Medical Advisory Committee should be kept abreast of the activities and philosophy of the Agency. Dr. Robert E. Brabham, Assistant Commissioner, presented a film prepared by the Agency "The American Dream." This was indeed an inspiring presentation.

Mr. Bud Harrelson, Program Specialist, gave a briefing of the Vocational Rehabilitation Program for the Deaf and how it has grown since its beginning in 1972. He also told of a move of a small group of deaf individuals that want to form an independent, separate agency for the deaf and call it a Commission for the Deaf. They want to have control over existing agencies that have programs for the deaf. We support an expanding council concept, and we support growth of deaf programs in the state which would involve all of the state agencies. We are opposed to a separate, independent commission that is doing what we are already doing, but at the same time we are for a council approach. He told of a pending suit involving a deaf individual who is asking for interpreter assistance while taking a course to maintain teaching credentials.

Dr. Ben Miller presented a communication from the South Carolina Medical Association Council over the signature of Dr. Halsted Stone, Chairman. This communication indicated that SCMA House of Delegates had adopted a resolution stating that the AMA's CPT-4 (Current Procedural Terminology-4th Edition) would be the officially endorsed coding system for physicians' use in South Carolina. Vocational Rehabilitation has been operating under a five digit coding system which is identical to the AMA CPT. There will be no problem for Rehabilitation to continue this coding; and, in fact embrace the AMA CPT.

Members of the committee commented on the CPT coding system and there was no opposition to this recommendation.

At this point Dr. Halford commented on the possible use of nurse practitioners to perform initial general physical examinations. In direct questioning to Mr. Dusenbury, it was indicated that under the Rehabilitation regulation and law, such examinations must be done by Medical Doctors.

Dr. Clarke commented on Vocational Rehabilitation clients referred for "Comprehensive Employment and Training Act" participation. Dr. Brabham indicated that these people require a physical examination before they can be accepted into the program; thus, the referral of these applicants. CETA contracted with VR to arrange medicals because the mechanism was established and a new group contacting doctors would be prevented. No regular VR money is involved.

Mr. Dusenbury commented that the agency did survey high schools for impaired students, particularly ones with severe disabilities, since scholarships could be furnished these individuals for further academic training when this is a part of the rehabilitation plan of service.

Dr. Clarke commented on OASI physicians inquiries. He felt that at times undue pressure was put on the physician and patient to complete documents without sufficient time.

Mr. Rick Vandiver, Acting Director, Disability Determination Division, stated that the disability program is based on medical evidence to determine disability. He indicated that the division tries to keep the patient involved in their claim process and to let him know that the final decision must wait for the medical information required in his case. After the initial supporting evidence has been obtained, there are many cases that require additional study and where payment can be provided for under the program. Mr. Vandiver explained that the Disability Determination Division handles two programs: 1) Under the Social Security Program, worker's program, the burden does lie on the applicant to provide medical information; and, 2) under Title 16 (Supplemental Security Income), the agency can buy medical information.

Dr. Wannamaker commented on the importance of continuity of medical care, beginning with the initial examination and going through medical consultations as required. He stressed the importance of involvement of the primary family physician in the overall rehabilitation process. The committee and agency personnel were in agreement with this statement of concept.

Dr. Alec Brown, representing the Dental Profession, indicated that there had been no real problems as far as the relationship of Vocational Rehabilitation with the dentists in the state. The invaluable assistance of Dr. Alec Brown to the agency was acknowledged by the Chairman.

Dr. Manly commented on the relationship of the agency with the ophthalmologists in the state. He indicated that Vocational Rehabilitation Agency was not in a position to accept acute eye cases. Mr. Dusenbury explained the different approach and services furnished by the Commission for the Blind as compared to Vocational Rehabilitation. Dr. Manly's comments supported Vocational Rehabilitation's concept and activities.

Mr. Raynold Stoudemayer, Rehabilitation Services Division, made further comment on the AMA's CPT concept, indicating that this would cause no problem in processing claims in the agency.

The Chairman thanked the Committee for their comments and activities in assisting the Agency over the years; and, the conference adjourned.

Ben N. Miller, M.D., Chairman
SCMA Medical Advisory Committee to
S. C. Vocational Rehabilitation Agency

PEDIATRIC SOCIETY MEETING

The South Carolina Pediatric Society and the South Carolina Chapter of the American Academy of Pediatrics will hold its spring meeting in conjunction with the South Carolina Medical Association meeting in Myrtle Beach, South Carolina. The meeting will be held from 9:00 — 12:00 Noon and from 2:00 — 5:00 p.m. on Saturday, April 29, 1978 in West Suite B of the Myrtle Beach Hilton.

PAST PRESIDENTS SOUTH CAROLINA MEDICAL ASSOCIATION

1943	Thomas A. Pitts, M.D.
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1955	Thomas R. Gaines, M.D.
1956	O. B. Mayer, M.D.
1957	William H. Prioleau, M.D.
1958	D. Lesesne Smith, M.D.
1959	Robert L. Crawford, M.D.
1960	William Weston, Jr., M.D.
1962	Charles N. Wyatt, M.D.
1963	James H. Gressette, M.D.
1964	Robert Wilson, M.D.
1965	Frank C. Owens, M.D.
1966	Julian P. Price, M.D.
1967	George Dean Johnson, M.D.
1968	Norman O. Eaddy, M.D.
1969	Joel W. Wyman, M.D.
1970	William L. Perry, M.D.
1971	Ben N. Miller, M.D.
1972	John P. Booker, M.D.
1973	Edward F. Parker, M.D.
1974	Harold P. Hope, M.D.
1975	Donald G. Kilgore, Jr., M.D.
1976	C. Tucker Weston, M.D.

REFERENCE COMMITTEES*

SECTION 26: SCMA BY-LAWS: "The Speaker of the House of Delegates shall appoint from the members of the House of Delegates the committees enumerated in this section and such additional committees as the House may approve. Each committee shall consist of five members, a chairman to be designated by the Speaker. These committees shall serve only during the session at which they are appointed."

REFERENCE COMMITTEE ON CREDENTIALS

REFERENCE COMMITTEE ON REPORTS OF COUNCIL AND OFFICERS

REFERENCE COMMITTEE ON PUBLIC AND OCCUPATIONAL HEALTH

REFERENCE COMMITTEE ON LEGISLATIVE ACTIVITIES AND PUBLIC RELATIONS

REFERENCE COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

REFERENCE COMMITTEE ON MEDICAL SERVICE AND INSURANCE

REFERENCE COMMITTEE ON AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

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* Appointees to 1978 Reference Committees will be listed in Delegates' Handbooks, but were not available at publication deadline.

REPORT OF THE CHAIRMAN OF SOCPAC

With the 1978 primary elections only a few months from now, SOCPAC is placing renewed emphasis on recruiting members to add support to our campaign involvement on behalf of the medical profession. We are making extensive contacts through presentations to county societies, direct mailings, newsletters, *Journal* articles and advertising, and the Annual Meeting Luncheon and booth display.

While our efforts have increased our membership over last year, we are still concerned over our participation from the urban areas. We have also targeted a potentially excellent group for membership, physicians who recognize the need and importance of organized medicine through SCMA membership, but who have not joined SOCPAC. We are presenting the message to this group, that a unified political voice is an integral and vital part of organized medicine.

For 1978, SOCPAC is considering each U. S. Congressional race in this state, more than twenty key State House campaigns, and the elections for Governor and Lt. Governor. This will involve SOCPAC in more races than ever before. The extent of participation in these campaigns, between now and November, will be determined by physician support of SOCPAC. Another important facet of our 1978 activity, is urging physicians to also become personally involved in supporting candidates who are supportive of medicine.

At present, we have received tremendous support from the leadership of the medical profession, but we need the support of all physicians concerned with the future of medical care.

Submitted By: Kenneth N. Owens, M.D.
Chairman

SOCPAC LUNCHEON SPEAKER CONGRESSMAN FLOYD SPENCE

The South Carolina Political Action Committee is pleased to have Congressman Floyd Spence as speaker at the 1978 SOCPAC luncheon. The luncheon is scheduled for 1:15 p.m., Saturday, April 29, 1978 in the East Ballroom of the Myrtle Beach Hilton.

Congressman Spence was born in Columbia, South Carolina, was married to the late Lula Hancock Drake, and has four sons. His academic background includes graduation from Lexington High School, a B.A. in English from the University of South Carolina, and a Juris Doctor Degree from the University of South Carolina Law School.

Mr. Spence is active and has served in leadership capacities in numerous civic and religious organizations, including the Farm Bureau, the West Columbia-Cayce Chamber of Commerce, St. Peter's Lutheran Church, the Lexington County Historical Society, the American Legion, Veterans of Foreign Wars, and the Fellowship of Christian Athletes.

Congressman Spence served as a Captain in the United States Navy Reserve, and is a former Group Commander of the Naval Reserve units in Columbia, South Carolina.

His career spans many areas, including a busy law practice in Columbia, member of the South Carolina House of Representatives, 1956-62, and member of the South Carolina State Senate, 1966-1970.

Mr. Spence was elected to Congress as a Republican from the Second District in 1970, and has since served on several important committees.

His honors include listings in *Who's Who in America* and *Who's Who in American Politics.*

THE SOUTH CAROLINA DERMATOLOGICAL ASSOCIATION

ANNUAL MEETING
APRIL 28 - APRIL 30, 1978
MYRTLE BEACH HILTON HOTEL

FRIDAY, APRIL 28	7:30 - 6:30	Registration Hilton Hotel Lobby
SATURDAY, APRIL 29	7:30 - 5:00	Registration Hilton Hotel Lobby
	8:45 - 9:00	Coffee and Rolls
	9:00 - 9:05	Welcome — A. M. Robinson, M.D. Pres., S. C. Dermatological Assn.
	9:05 - 10:15	*Under and Over Diagnosis of Contact Dermatitis* William P. Jordan, M.D.
	10:15 - 10:30	Coffee Break
	10:30 - 11:45	*Skin and Hormone Interrelationships* Lamar S. Osment, M.D.
SATURDAY EVENING, APRIL 29	6:00 - 7:00	Cocktail Reception, Maison-Sur-Mer (Frog Room)
SUNDAY, APRIL 30	8:45 - 9:00	Coffee and Rolls
	9:00 - 10:30	*Dermatological Problems and Interesting Cases* Doctors Jordan and Osment
	10:30 - 10:45	Coffee Break
	10:45 - 11:30	Question and Answer Session
	11:30 - 12:00	Business Meeting

FACULTY

Lamar S. Osment, M.D.
Professor of Dermatology
University of Alabama Medical School
Birmingham, Alabama

William P. Jordan, M.D.
Professor of Dermatology
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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 MAY 1978 NUMBER 5

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C.

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

VOLUME 74 MAY 1978 NUMBER 5

EVALUATION OF THE DIZZY PATIENT*

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Evaluation of the dizzy patient is often a perplexing problem, as "dizziness" means various things to different people. Dizziness is perhaps best defined as any discomfort, other than pain, related to the head.[1] Among the sensations it encompasses are "giddiness," "lightheadedness," "faintness," "floating feeling," "wooziness," and "swimming sensation." Those patients who have true vertigo; that is, an hallucination of motion, should be differentiated from those who do not have this sensation of turning or spinning. True vertigo is more likely to indicate vestibular system disease.

The problem of dizziness is common and can be very complex. Frequently the patient is unable to describe the symptoms concisely, and the history has to be extracted bit by bit. A recent study indicated that more than 14 million persons over 45 years of age experienced dizziness of sufficient degree to be classed as a major medical complaint.[2] It was fourth in frequency among women interviewed — following headache, fatiguability, and constipation; while in men, it placed seventh.

There are three major systems which maintain orientation of the body in space — the vestibular, the ocular, and the proprioceptive. At least two of these must be functioning to maintain balance. Abnormal function of any of these systems, or a combination thereof, can produce a sensation of dizziness. Considering these factors, it is not surprising that dizziness may have a myriad of causes, which can be divided into peripheral, central and systemic.

The most important step in evaluating the dizzy patient is a detailed history. The time of onset, duration, frequency, severity, effect of change of position, and possible precipitating factors are significant. Associated symptoms such as hearing loss, tinnitus, otalgia, otorrhea, or a sense of fullness in the ear may indicate primary ear disease. Others such as blurred vision, numbness, weakness or altered states of consciousness suggest central nervous system disease. A tendency to fall usually implicates the labyrinth with the direction of fall towards the affected side.[3] The patient who can stand unsupported during an attack of dizziness is unlikely to have true vertigo.[4] By a careful personal and family history hypothyroidism, diabetes mellitus, or syphilis may be suspected.

Previous drug therapy, current medications, other medical diseases and the use of alcohol and tobacco is ascertained. A history of trauma is important, especially if there was loss of consciousness or otorrhea.

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The physical examination includes a complete neuro-otologic evaluation, cranial nerve and labyrinthine fistula testing, auscultation of the head and neck for bruits, and the Romberg and positional tests for cerebellar disease. Evaluation of the eighth cranial nerve includes audiometry and caloric testing, preferably with electronystagmography. The detection of a sensorineural hearing loss indicates the need for further and audiometric tests.

When further testing points to a retrocochlear or vestibular nerve lesion, radiographic evaluation of the internal auditory meati is done to rule out an acoustic neuroma or other cerebellopontine angle tumors. The involvement of other cranial nerves, abnormal cerebellar tests, or the presence of bruits denote a probable central disorder. Even though the internal auditory meati appear normal radiographically, if other evaluations signify an acoustic neuroma, a posterior fossa myelogram may reveal such a lesion.

Nystagmus, which must always be sought, may be difficult to interpret. Spontaneous horizontal nystagmus in the position of primary gaze is an abnormal finding and commonly indicates disease of the vestibular system. When vertical, different in the two eyes, or increased by visual fixation, it is diagnostic of a central nervous system lesion. Nystagmus without vertigo is either of central or ocular origin. Observation of the patient during an acute episode of vertigo without spontaneous nystagmus suggests that the symptoms are probably psychogenic, rarely central. Nystagmus of peripheral origin can be suppressed or eliminated by visual fixation so that it is desirable to evaluate the patient while wearing Frenzel lenses, which eliminate fixation, or with the eyes closed using ENG recordings.

Nystagmus produced by changing head positions may be due to peripheral or central disease. Positional nystagmus of peripheral origin commonly has a latent period, lasts less than one minute, is fatiguable, beats in one direction only, and is accompanied by vertigo. Positional nystagmus of central origin, however, usually has no latent period, lasts more than one minute, does not fatigue, may change direction with alteration of head position, and vertigo may be absent.

On the information obtained from the history, physical examination, and laboratory tests, most dizziness can be classified into recognizable clinical entities. Unfortunately, there are a number of patients whose dizziness is never clearly understood and defies all attempts at classification. In all patients, even those in whom the diagnosis is uncertain, an attempt is made to rule out serious pathologic entities or those for which specific therapy is available, i.e., acoustic neuroma, hypothyroidism, hypoglycemia, etc. Treatment for the majority of the other causes of dizziness is supportive. The use of vestibular suppressant drugs such as diazepam, meclizine and dimenhydrinate meet with varying degrees of success. A partial listing of the disorders producing dizziness, but including the major disorders encountered in clinical practice, follows.

I. PERIPHERAL LESIONS — These are due to labyrinthine or eighth nerve abnormalities.

Meniere's disease has received the most attention, and many feel is frequently over-diagnosed. It is presumed to be caused by hydrops of the endolymphatic system, characterized by episodic vertigo, hearing loss, and tinnitus. The attacks commonly last from 30 minutes to two hours accompanied by nausea, vomiting, and other autonomic manifestations. The diagnosis is made on the history and the audiometric findings of a fluctuating hearing loss, recruitment, and little or no tone decay.

Benign positional vertigo is the most common labyrinthine disorder, occurring twice as frequently as any other peripheral lesion according to Drachman.[5] The dizziness is characterized by sudden, short spinning sensations which come on when the head is turned quickly or tilted backward. Vestibular sensitivity and audiologic tests are normal. Only through positional testing can nystagmus be elicited. When the head is turned into the suspect position, nystagmus and vertigo appear after a brief latent period. After repeated testing, the response fatigues and may eventually disappear. The nystagmus is usually of the combined horizontal-rotary type, but may be purely horizontal or rotatory.

Vestibular neuronitis is marked by sudden severe vertigo increasing in intensity for several hours and gradually subsiding over a period of several days to weeks. It often follows an acute respiratory infection or other viral illness, and there is no hearing loss or tinnitus. Spontaneous nystagmus may be directed to the contralateral side with caloric tests usually indicating hypofunction of the labyrinth. After the acute episodes subside, the patient continues to experience slight lightheadedness for some time.

"*Labyrinthitis*" includes any sudden, acute disorder of the labyrinth ordinarily of viral, bacterial, or toxic origin. Caloric testing usually reveals hypofunction of the involved labyrinth. Hearing loss may or may not be present. There may be an irritative nystagmus toward the involved ear, which changes to a paralytic nystagmus away from the involved ear when the labyrinth ceases to function.

Acoustic neuroma is the most common cerebellopontine angle tumor. Patients complain of unsteadiness and true episodic vertigo is not infrequent. While the hearing loss may be minimal in the early stages, discrimination scores are generally poor and tone decay can be demonstrated. Caloric testing will usually reveal a hypofunction of the involved side. As the tumor enlarges, other cranial nerves become progressively ensnared, many times starting with the fifth and first noted by a decreased ipsilateral corneal reflex. The definitive diagnosis is made by radiologic evaluation of the internal auditory canals. A posterior fossa myelogram is presently considered to be the most accurate radiologic study, and computerized axial tomography (CAT scans) using contrast media are also useful.

Other peripheral causes of dizziness include *trauma, temporal bone fracture, infections of the middle ear, vascular disorders of the labyrinth,* and *labyrinthine fistula.*[2]

II. CENTRAL LESIONS — These are primarily lesions of infectious, vascular, neoplastic, congenital, metabolic, or degenerative origin affecting the brain stem, the anatomic site of the vestibular nuclei.

The most common central lesions are basically vascular, i.e., insufficiency of the vertebral-basilar artery system. Atherosclerosis is the primary cause of the momentary, spontaneous dizziness that elderly patients experience.[2]

In *brain stem lesions,* the dizziness is longer-lasting than with the labyrinthine type. Auditory function is often spared since vestibular and cochlear fibers diverge sharply after entering the medulla. The nystagmus tends to be protracted and persists after the vertigo has subsided. The most important characteristic of brain stem vertigo is that other brain stem structures are generally damaged; with symptoms and signs related to vision, speech, swallowing, level of consciousness, somatic sensation and general muscular activity. An almost pathognomonic sign of brain stem disease is vertical nystagmus.

III. SYSTEMIC LESIONS — Although the mechanism remains obscure, certain systemic lesions are known to cause dizziness, probably on the basis of a vascular disturbance.

Hypoglycemia and *hypothyroidism* should be considered and can be treated with specific therapy. The five-hour glucose tolerance test and serum T-4 determinations are employed for diagnosis. Hypertensive and diabetic patients also complain of mild bouts of dizziness.

The *syndrome of multiple sensory deficits* is an annoying cause of dizziness. The patients are elderly, often diabetic, and have two or more of the following abnormalities: visual impairment, neuropathy, vestibular deficit, cervical spondylosis, and orthopedic disorders interfering with ambulation. They have little trouble when lying or sitting, but undergo lightheadedness when walking, particularly when turning.[5]

The etiology lies in *psychophysiologic disturbances* in many instances. In Drachman's study of 125 patients, *hyperventilation syndrome* was the cause of symptoms in almost one-fourth of the group.[5] Patients with non-organic problems have less well-defined symptoms and resent being pressed for details of their "dizzy spells." On the other hand, a patient with true vertigo gives a concise history of a turning or whirling sensation.

Evaluation of the dizzy patient presents a difficult diagnostic dilemma for the physician. With careful appraisal, the etiology can usually be determined, although this is not always the case. As far as possible, serious local or systemic pathological lesions should be ruled out. When specific therapy is not indicated, the treatment is supportive. ☐

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A REVIEW OF PARANEOPLASTIC SYNDROMES ASSOCIATED WITH TUMORS OF THE GASTROINTESTINAL TRACT, LIVER, COLON, AND OTHER COMMONLY ENCOUNTERED SITES

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The term, Paraneoplastic Syndrome, arose first in medical usage in respect to the observations that cancer of the colon, lung and bladder often originated in more diffuse areas of epithelial changes or in initially benign polyps. Similarly, it was applied to granulocytic leukemias arising from diffuse marrow changes such as polycythemia and hemoglobinemias. Lymphomas and lymphatic leukemia are known to arise in association with chromosomal abnormalities; and, more recently, the recognition that the Epstein-Barr virus of infectious mononucleosis where there are genetic alterations in immunomechanisms in certain families will result in this virus which usually causes infectious mononucleosis to cause Burkitt's Sarcoma in some and leukemia in others. In other words, genetic or organ or cellular atypias in which malignancy develops have been termed paraneoplastic.

More recently, a broader use of the term paraneoplastic has developed to indicate the systemic or distant cellular or organ changes or injuries which are associated with or result from a malignancy. The changes are due to altered metabolic functions of either a stimulatory or inhibitory type produced by the proliferating neoplastic cells and are mediated by humoral factors.[1] The study and isolation of these humoral substances has shed light on many of the differentiating mediators involved in the processes of ontogeny and the role of immune processes in cellular control and tissue differentiation.[2] The recognition and techniques for isolation of these substances will undoubtedly lead to new ways to more readily identify early malignancy. These deranged metabolic processes occur in 1/5 of all cancer patients in all stages of their disease and in ¾ of the patients with malignancy these will be fully manifest in time. Death is more often from the metabolic or distant derangements in organ function than from the primary malignancy itself or its metastasis. Appropriate therapy can lead to less suffering and often to an extension of life.[3] An attempt to recognize and identify these metabolic or immune derangements is therefore important.

Among the several syndromes more often observed are those of fever, anorexia, cachexia, altered immunity, lactic acidosis, alterations in glucose metabolism with both hypoglycemia and hyperglycemia and alterations in gluconeogenesis, hyper and hypocalcemia, hyperadrenocorticism, deranged clotting, vascular dilatations and vasoconstrictor reactions, hyperuricemia, anemia, polycythemia, virilization, feminization, and precocious sexual development. Skin, muscle, hair, brain, spinal cord, and the duodenal mucosa are often sites of significant tissue injury or in alterations of function mediated by humeral agents released from neoplastic cells.

This presentation reviews briefly a number of the paraneoplastic syndromes associated with a variety of neoplasms and in more detail those of gastrointestinal or abdominal neoplasms. (See Table I)

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TABLE I

SYSTEMIC MANIFESTATIONS OF CANCER (3)

HORMONAL ABNORMALITIES - EXCESSIVE STIMULATION

ACTH Excess - Hyperadrenocorticism - Cushing type
Inappropriate - Anti-Diuretic Hormone - (Schwartz-Bartter Syndrome)
Estrogen excess - Gynecomastia, LH, FSH excesses
Serotonin - Kallikrein - Gastrin Excess - GI Tract Ulcer - Diarrhea, Vascular flushing, etc.
Parathormone Excess - Hypercalcemia
Pyrogens - Fever
Tumor Angiogenic Factor (TAF) - Capillary dilations - clubbing of digits - osteoarthropathy
Granulocytopoietin - Leukemoid reaction
Erythropoietin - Haematopoietin Excess - Polycythemia

VASCULAR AND HEMATOLOGIC ABNORMALITIES

Kallikrein - Phlebitis
Plasmin Activators - Clotting abnormalities
Fibrinolysins - Bleeding - Purpura

PLASMA INHIBITING FACTOR EXCESSES

CNS Sppetite Depression - Anorexia - Cachexia
Fibrinolysins - Bleeding

DERANGEMENTS OF METABOLIC FUNCTIONS

Hypoglycemia, Hyperglycemia, Hypoalbumenia, Lactic Acidosis
Globulin derangements, Lipolysis, Cachexia, Anemia

IMMUNOLOGIC DERANGEMENTS

Muscle and Dermatologic - acanthosis, polymyositis, dermatomyositis
Neuronal and Brain Injury - Polyneuropathy, spinal cord, cerebral and cerebellar any myelin and neuronal injury

These hormonal or other metabolically active substances with stimulating or inhibiting properties are related to ontogentic and embryonic processes. There is much evidence that neoplastic changes reflect a reversion to the embryonic cell potentials of the primordial embryonic areas of tissue origin, by reversion to the cellular potentials of the embryonic ectoderm, mesoderm and entoderm.

Tissues of the lung derived from the proximal entoderm, for example, have potentials for producing ACTH-MSH, growth hormone or HGH, LH, FSH, and parathormone.

Structures from the branchial cleft — the lung and thymus — can produce parathormone. Those from the foregut can produce insulin, gastrin and secretin similar to the secretory cells of the stomach, duodenum and pancreas. Also, neoplasms of the liver and retroperitoneal tumors possess embryonic cell properties.

Neoplasms arising in tissues of neuroectodermal origin can secrete ADH, calcitonin, kallikrein, serotonin, gonadotrophins, and catechols. Also, these types of hormones can also be produced by tumors arising in the lung, GI tract, and adrenal from the areas derived from this embryonic precurser.

The urogenital ridge tumors which develop in the kidney, prostate and gonads can elaborate as neoplastic tissues, erythopoietin, plasmin activators and gonadotrophins.

A more precise classification of the ectopic hormone producing tumors has been recently proposed and these have been termed *Group I* and *Group II* tumors.

Group I tumors, derived from cells of neural crest origin, can produce the endocrine polypeptides and are termed *APUD cells*. This mnemonic name was proposed by Pearse in 1969 in which he observed that these cells could concentrate the amines and precursors of the active amines and decarboxylate these to an active form, store, and release these. *A*mine *C*ontent, *P*recursor *U*ptake, and *D*ecarboxylation functions have given rise to the term APUD cells.[4] These cells can produce insulin, calcitonin, ACTH, melanocyte stimulator, vasopressin, gastrin, glucagon, secretin, serotonin, histamines, and catecholamines in their neoplastic state.[5]

Group II cell type tumors are derived from entoderm and mesoderm and are the non-oat cell lung tumors, hepatomas, cholangiomas, Wilm's tumor, hypernephroma, adrenal cortical tumors, nongerminal gonadal tumors, vascular structure tumors, connective tissue and mesodermal tumors, reticuloendothelial tumors, colon tumors, non APUD cell GI tract tumors and melanomas. The Group II cell types elaborate parathormone, erythropoietin, prolactin, growth hormone, insulin-like but not true insulin substances, renin and thyrotropin. These classifications relate to ectopic hormone production, but there is some evidence also that immunological mediated phenomenon may also relate to the Group II type but not to Group I so that in time better diagnostic classifications may be developed from these sorts of studies as well as a better understanding of the systemic or paraneoplastic phenomenon of tumor growth.[6]

Dermatomyositis, myopathies and neurologic disorders are related to alterations in immune mediated mechanisms.

Hyperuricemia, hypokalemia, hypercalcemia, alkalosis, metabolic hyperchloremic acidosis, and lactic acidosis are frequent problems associated with neoplasms. These are often mediated by secondary mechanisms which arise from immunologically-mediated renal tubular injury. In addition, tubular injury through dehydration and by the deposition of amyloid or other abnormal proteins such as the Bence-Jones type are frequent problems. Although hypertension may result from renal injury, more often it is a result of increased catecholamines or their precursors or to increased intracranial pressure from various causes. Hypokalemia is more often in association with diarrheal states caused by gastrin or secretin or some substance released by villous adenoma of the rectum. Anorexia, nausea and vomiting are often associated metabolic alterations which lead to dehydration and secondary alterations in mineral and acid base abnormalities.

The initial symptoms of several types of malignancy may be a hemorrhagic disorder or disturbed clotting mechanisms with superficial migratory thrombophlebitis and pulmonary embolism. Fibrinogen turnover is often increased, and fibrin has been implicated as a stimulating factor in both the primary tumor and for metastatic growth. Clot promoting substances are elaborated by tumor cells of the leukemias and prostate cancer. In these there is often disseminated intravascular coagulation which may in turn lead to bleeding with thrombotic thrombocytopenic purpura. Likewise, by depressed functions hemorrhage may result from hypofibrinogenemia, reduced levels of factors V and VIII, and impaired platelet function and accelerated fibrinolytic activity. Although removal of primary tumor as of the prostate is the best therapeutic approach, the use of heparin and aspirin may also be of some benefit. Thrombophlebitis is frequent with colon cancers as it is with pancreatic, gastric, and lung cancers due to excess thromboplastins. It is usually of the migratory type often involving the arms and in those cases often associated with pulmonary embolism in contrast to the infrequency of recognized pulmonary embolism with phlebitis of the arms from other causes. Heparin is effective in managing these problems. Non-bacterial endocardities with mitral and aortic valve thrombosis and embolism for unknown reason is often associated with colon cancer and also with gastric and pancreatic as well as lung malignancies, and migratory phlebitis is a frequent accompaniment of these endocardial problems.

Since first reported by Virchow in 1855 in a patient with disseminated breast cancer, hypercalcemia has been an often recognized problem in advanced cancer of the breast and occasionally with malignancy of the gall bladder and kidney.

Breast cancer cells produce an osteolytic substance, and this appears to be the chief cause for serum calcium elevations. Phosphaturia is not an accompaniment unless caused by IV fluids, etc., and a parathormone substance has not been identified as being involved in this process. The osteolytic substances of the breast and some other cancers such as those of the lung, thyroid, and colon are now thought to be prostaglandins for which suppressive agents are available.

Hypocalcemia is also frequent in breast cancer. Vitamin D resistance and calcitonin are thought to be responsible to some degree and are due to the neoplastic cells producing factors responsible for these findings.

Although lung cancers often elaborate a parathormone-like substance, it is usually inactive.

Most often adequate hydration and corticoids will correct the hypercalcemia with, at times, the addition of Methotrexate and Androgens as an added benefit. Phosphate solutions will often result in the deposit of calcium in soft tissues such as the cornea, heart, lung and kidney and are, therefore, not recommended for therapy in these instances, this often occurs when renal failure is a complication. Parathormone-like active substance increases are more often found with cancer of the colon, lungs, kidney, ovary and cervix but these seldom cause significant hypercalcemia in contrast to what is often seen in leukemias. Mithramycin and Actinomycin D appear to be the agents of choice for reduction of hypercalcemia in these latter instances.

A number of studies have demonstrated that the anemia of cancer is not due to marrow destruction or failure of erythropoietin production but that red cell life is often shortened and that nutrition plays a role, in fact, many tumors produce erythropoietin and stimulate erythropoiesis. There is some evidence, however, that at times an anerythropoietin can be elaborated but this blocking agent is not frequently found.

Feminization, virilization, and sexual precocity are produced in a variety of ways by neoplasms either through increased androgen or estrogen like substances or by excess secretion of gonadotrophins through stimulation of the pituitary or by the alteration peripherally of androgens. Testicular, ovarian, and adrenal tumors are implicated in these mechanisms. Also implicated are teratomas, trophoblastic tumors, hypothalmic, pineal, and ACTH producing tumors, including those of the liver and bronchus.[6, 7]

Recent evidence indicates that neoplastic changes in cells occur frequently but the body's immunity controls and prevents proliferation by early detection of these. Viruses in animals have been observed to produce such changes but this has not been proved in man.

The removal of benign and malignant primary tumors does often result in change or clearing up of dermatomyositis, osteoarthropathy, and other paraneoplastic syndromes where immune derangements have been implicated. "T" lymphocytes are the implicated routes both for cancer control and the development of paraneoplastic reactions. Where suppressed, there often results extension of the neoplasms and the manipulations of these bears much promise in future therapeutic endeavors.[8, 9]

Although hypoglycemia is often associated with excess insulin type substances, there is evidence that neoglucogenesis is also often suppressed either in the liver or by reduction of lipolysis and, with the resultant malnutrition, there results a decrease in pituitary-adrenal responsiveness which worsens the hypoglycemia. Growth hormone like substances may result in hypoglycemia or may result in derangements of the hypothalmic functions.

The derangement of hypothalmic function and pituitary function have also been implicated in the development of anorexia and cachexia with reduced appetite stimulating responses due to deranged amino acid plasma concentrations through metabolic changes or by derangement of these due to unknown cause from the neoplasm. Also, polypeptides have been isolated from blood and urine in increased concentrations in patients with cancer who are anorexic. Increased metabolic rates are also often present even in the advanced stages of weight loss. Overall, the metabolic rate is frequently chaotic in the patient with cancer.

Protein losses from the stomach and gut with derangements in absorption and increased mucous loss are also often present along with increased protein catabolism. Not only are GI tract tumors involved in such processes but also may occur with lung tumors, myloma, sarcoma, thymoma and reticoluloendothelial neoplasms as well as with a variety of benign tumors, but in these, GI tract mucosal abnormalities are preexisting.

It should be pointed out that all paraneoplastic syndromes cannot be related to tumor products either hormonal or inhibiting substances, nor due to acquired immunological dysfunctions but are primarily due to underlying genetic and host abnormalities in which neoplastic proliferation occurs and most likely arising out of these host defects rather than being responsible for them. This was the earlier concept of the term paraneoplastic syndrome.

At this point, it is appropriate to review the systemic manifestations of tumors of the small intestine, colon, liver and abdomen.

Small bowel tumors are uncommon and consist chiefly of hamartomas including those of the mucosa, such as Brunner's gland hamartomas, neurofibromas, lymphangiomas and cysts.

The adenomas, lymphoid polyps, leiomyomas, ganglioneuromas, and lipomas are benign, but there are also adenocarcinomas, carcinoids, leiomyosarcoma and lymph and plasma cell sarcomas which are malignant.

Peutz-Jegher's syndrome, Cronkhite-Canada syndrome and Gardner's Syndrome are inherited abnormalities of the GI tract in which benign and occasionally malignant tumors arise as is also the case in Von Rechlinghausen's disease and Turner's syndrome. In these instances, there may be involvement not only of entodermal tissues but also those of the ectoderm and mesoderm. These have genetic patterns of heredity.

Previously discussed, the APUD cell disorders and their manifestations of various hormonal excesses and these endocrine excesses are seen in the malignant tumors of the small bowel with ACTH excesses, insulin excess, flushing reactions due to secretin and various kinins and disorders of plasma proteins with excesses of globulins and dimunition of albumin, often with diarrhea, hypokalemia and peptic ulceration.

Colon cancer is far more common than small bowel malignancy. In the right colon it often presents with unexplained anemia due to cryptic blood loss. Severe protein loss often accompanies colon tumors as it does with stomach tumors with excessive mucous and serous losses. Villous rectal adenomas, usually benign, cause diarrhea and profuse fluid and potassium depletions. Those above the splenic flexure rarely cause these problems due to rectal reabsorption of fluid and potassium which is interferred with rectal adenomas by mechanisms thought to be due to an abnormal mucosal cell function with impaired resorption.

APUD cell disturbances such as Cushing's syndrome and hypercalcemia are encountered in a few instances. Carcinoids produce symptoms if in the foregut or midgut or if metastatic, but not if confined to the rectum or appendix, and at these latter sites do not produce serotonin or other kinins for reasons not known. Thus, for years appendiceal carcinoids were considered as unusual but not particularly important. Only as carcinoids were recognized in other sites was it realized that the vasoactive substances these tumors release were physiologically significant. Hypoclycemia does not occur in colon tumors except when the colon is invaded by neoplasms of the pancreas, liver, hepatomas or retroperitoneal fibrosarcomas. With these, an excessive glucose uptake by the tumor as well as an excess of insulin substances and impaired neoglucogenesis and glycolysis are considered the cause. The exact mechanisms involved in this derangement of glucose homeostasis are not now known.

Acanthosis nigricans and dermatomyositis are not uncommon accompaniments of colon cancer. Melanocyte stimulating hormones are excessive in those with acanthosis. Dermatomyositis when seen in a patient over age 40, should bring to mind malignancy and particularly colon malignancy or that of the breast, lung or stomach, but not in younger persons. In the younger age group dermatomyositis is not observed to be associated with malignancy.

Diffuse mucosal atrophy of the small bowel often occurs with colon cancer by an unknown mechanism, thought to be deranged immunity, these changes lead to problems of absorption, fluid exchange and in the end severe malnutrition. Although the lung is the most frequent site of malignancy with cerebral, cerebellar and peripheral nerve changes, colon cancers are also implicated in neuronal and myelin injury.

In Gardner's syndrome and Peutz-Jegher's syndrome, both familial and genetic disorders, at times, the colon is involved, in addition to all segments of the small bowel mucosa and at times that of the stomach.

Although most often when colon cancer is suspected it is due to the local effects of the tumor, but in many the paraneoplastic changes will be first presenting. The embryonic carcinogenic antigen is positive in only 30% of patients with colon cancer, but it is also positive, it must be remembered, with a number of other both benign and malignant tumors and at other sites than the colon. It is best used in the follow of patients post surgically after removal of a colon cancer, if positive before surgery, and as an indicator of recurrence it is of much value.

Finally, a brief review is indicated as to what is known and recognized about the paraneoplastic syndromes associated with hepatic tumors.

Primary liver cancer frequently presents as a fever of no known cause. This is due to the release of pyrogens from a proliferation of Kupffer cells and it is similar to the pyrogen that is released by granulocytes in various inflammatory states.

Hypoglycemia is a frequent and difficult problem to deal with due to poor hepatic glycogen production and storage. Other often observed findings are polycythemia, precocious puberty, eosinophilia, phlebitis, vitiligo, osteoarthopathy and clubbing of fingers, gynecomastia, anemia with cold agglutins, fibrinogen defects with bleeding, hyperlipidemia, hypercalcemia, carcinoid syndrome manifestations with flushing and diarrhea, other findings are elevated alkaline phosphatase and aldolase. With benign tumors, porphyria cutanea tarda and polycythemia are often seen.

In this discussion of the GI tract tumors, where do we fit the Zollinger-Ellison Syndrome, and Wermer's Multiple Adenomatosis Syndrome where intractable peptic ulceration is usually present along with various endocrine manifestations due to tumors of the pituitary, parathyroid glands, adrenals and lipoma development as well as adenomata of the pancreas? In his study of a family, Wermer found 19 of 20 with severe and intractable peptic ulcer as well as acromegaly, pituitary dwarfism, hyperthyroidism, hypogonadism, hyperparathyroidism, and hyperinsulinism and hyperadrenocorticism. All 20 members of this family were having pluriglandular problems. Additional larger family groups, consisting in one instance of some 135 members as reported in several recent studies have led to the development of a unifying hypothesis which suggests that a pancreas adenoma develops first and usually after the age of 10. This is initially a hyperplasia of the primordial cell of the islets of Langerhans causing so called nesidioblastosis with consequent oversecretion of gastrin, secretin or insulin and that these excesses in some not yet fully understood way affect other endocrine glands. Thus, Wermer's Syndrome and the Zollinger-Ellison Syndrome now appear to be parts of the spectrum of multiple endocrine adenomatosis.[10] Several patients with the Zollinger-Ellison diagnosis have, over a period of years of follow-up, now been observed to develop several other endocrine derangements. Recently some good results have been obtained using diazoxide and streptozotocin therapy, particularly in those with hyperinsulinism and with control of the recurring ulcers. Perhaps cymetidine will also prove useful in this respect. In variance to this hypothesis is the belief that these endocrinopathies relate primarily to embryonic APUD cell disorders. Perhaps we will find that there are both types of origins and perhaps we may, in the near future, distinguish between the two similar but pathologically different groups. ☐

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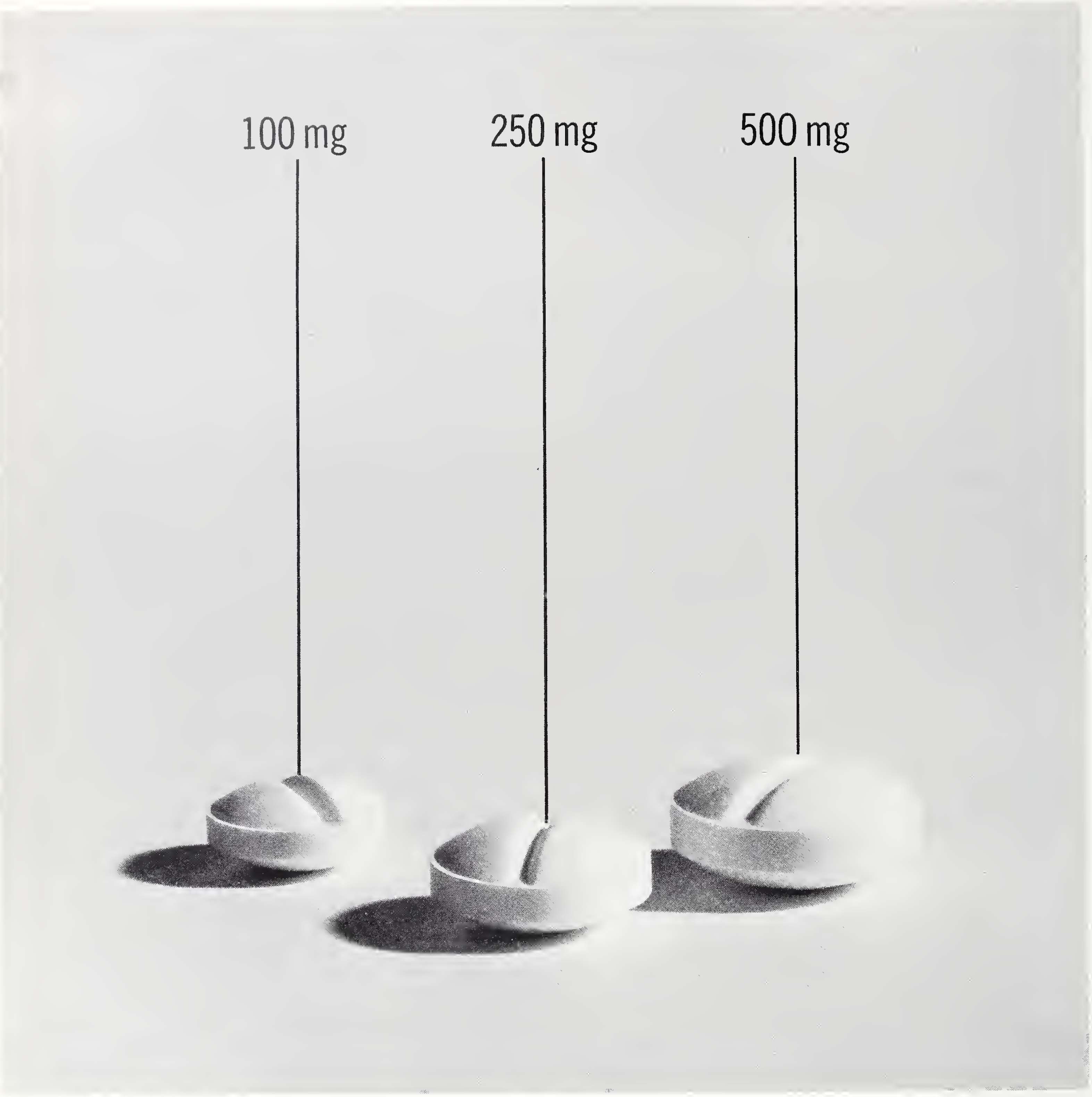

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PREDICTION OF SUCCESS IN MEDICAL SCHOOL*

PATRICIA B. SUTKER, Ph.D.**
W. MARCUS NEWBERRY, M.D.***
GILBERT B. BRADHAM, M.D.****

Prediction of successful performance in medical school and in the subsequent practice of medicine has been the goal of medical school admission committees at the Medical University of South Carolina and throughout the nation. Admission processes have been described as sufficiently refined to select students capable of adequate performance in the basic science curriculum, and studies show a relationship between a combination of grade point averages and Medical College Admission Test scores and performance in basic science years.[1, 2] Nevertheless, these elements of prediction operate at low levels of discrimination, and the potentiality for prediction of success using premedical school criteria has been shown to decrease with progression through medical school.[1] Further, it has been hypothesized that the student who excelled in basic sciences is no more likely to become a good clinician than one who did not,[3] and there is skepticism as to whether preadmission credentials or even early medical school performance provide a basis for prediction of ultimate clinical success.[4, 5, 6]

More recently, there have been efforts to predict medical student or physician success with certain nonintellectual variables such as personality characteristics or motivational levels. Gough and Hall[7] reported that personality tests predicted student outcome more accurately than aptitude scores or faculty interview evaluations. They cited such personality variables as responsibility, socialization, and communality as better predictors of graduation than performance criteria. Looking beyond graduation, Howell[8] differentiated U. S. Public Health Service physicians on the basis of supervisor ratings and compared them on personality, aptitude, and achievement variables. Groups did not differ on the latter measures, but physicians characterized as more successful scored higher on personality measures reflecting responsibility, self-control, tolerance, achievement by conforming, intellectual efficiency, personal adjustment, understanding of self and others, nurturance, and affiliation and lower on indices of abasement and deference.

In keeping with ongoing efforts to refine admission processes for the College of Medicine, Medical University of South Carolina, the present study was undertaken to identify those criteria among preadmission, medical school performance, and personality variables which are most useful in predicting levels of success in medical school. Particular focus was given to prediction of clinical proficiency as defined by conventional clinical grades and faculty ratings of clinical performance. Additionally, the relationship between basic science and clinical performances and the potential effectiveness of personality variables in predicting clinical success were explored. Students were classified into three success groups (high, intermediate, and marginal) on the basis of their separate performances on basic science and clinical requirements, and discriminant function analysis, a powerful technique which sifts data in search of the best discriminating variables, was used to predict membership in student success groups.

MATERIALS AND METHODS

Students in the College of Medicine Class of 1977 were followed through two years of basic science courses, a third year of clinical rotations, and a fourth year of electives in the clinical and basic sciences. This class was comprised of 165 students, almost all of whom were South Carolinians. They had been selected by admission procedures which included review of college grade point averages (GPAs), Medical College Admission Test (MCAT) scores, and medical university faculty interviews.[9] Added to the 165 students in the Class of 1977 were seven students from the previous class who had experienced difficulty with various courses. Of these 172 students, 146 completed medical college on schedule, 10 withdrew or were dismissed, one died, and 15 were held over until the next year.

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Criterion measures which were used in attempts to predict performance in medical school were preadmission entrance scores, basic science GPAs, National Board Examination scores, and personality characteristics. Preadmission entrance criteria included college GPAs and MCAT scores, and basic science GPAs were mean averages of grades obtained in the first two years of medical school. National Board scores were grades from Part I of the National Board Examination. This is a test taken after the first two years of medical school which reflects levels of knowledge on the more scientific aspects of medical education and does not relate directly to clinical situations. Personality characteristics were measured by the Adjective Check List, a self-administered test of 300 adjectives yielding scores on 24 personality needs,[10] which was completed voluntarily during Winter and Spring Quarters of the Senior year.

Performance in the first two years (basic science years) of medical school was defined in terms of GPAs derived from grades in each course, and performance in clinical courses was evaluated by the two methods described below. First, a test of clinical performance was devised using conventionally recorded comments by faculty and resident physician supervisors to evaluate student performance on each clinical service. These comments were retrieved from files maintained in the Dean's Office and typed on index cards. One card was used for each descriptive statement of a student. There were as many as 10 statements for each student, and references to student name, sex, or other descriptive data were excluded. A total of 1189 cards represented the student sample and were divided into thirds to allow a manageable number of cards for faculty rating. Nine volunteer members of the clinical faculty sorted the cards into categories labelled poor, fair, average, good, and excellent with three teams of three faculty members each operating individually to sort one-third of the cards. A numerical value on a scale of 1-5 was assigned to the above categories, and each student therefore could be rated numerically. Values ranged from 2.29 to 4.83. The reliability of sorting among faculty members was reflected by multiple correlations within each subset of cards with substantial agreement among raters ($\underline{r}$'s = .79, .81, .87, $\underline{p} < .001$). Faculty evaluators** included two members from the Departments of Medicine, Surgery, and Psychiatry, and one member from the Departments of Pathology, Urology, and Obstetrics and Gynecology. Second, performance during the clinical years was defined for each student by numerical average of grades earned on clinical rotations. A Pearson product-moment correlation coefficient was calculated between GPAs, representing performance on each of five third-year rotations (Medicine, Surgery, Pediatrics, Psychiatry, and Obstetrics/Gynecology), and faculty rating scores described above. The relationship between the two methods of assessing clinical performance was positive and significant ($\underline{r} = .66$, $\underline{p} < .001$).

In order to use discriminant function analysis to identify the most powerful variables for prediction of success, it was necessary to classify students into defined groups on the basis of their medical school performance first in the basic sciences and second on clinical requirements. Evaluation of GPAs for the first two years of medical school allowed categorization of students into three groups. Highly successful students were defined as those who had earned GPAs of 3.00 or greater on a scale of 0-4 and fell in the upper 25% of the class distribution, accounting for 41 students. An intermediate success group of 89 students was defined as those whose GPAs

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** Physicians on the faculty who rated supervisory comments descriptive of student performance were Dr. Newton C. Brackett, Dr. Victor E. Del Bene, Dr. Albert Kreutner, Jr., Dr. Middleton H. Lambright, Dr. Robert J. Malcolm, Jr., Dr. William C. Miller, Dr. J. Richard Sosnowski, and Dr. William R. Turner, Jr. All are at the Medical University of South Carolina, Charleston.

ranged from 2.00-2.99 and fell in the middle 50% of the class, and the remaining 42 students with GPAs of less than 2.00 and within the lower 25% of the class distribution were labelled marginally successful (see Table 1). Students were also divided into high, intermediate, and marginal success groups on the basis of a combination of clinical GPAs and faculty ratings. Twenty-nine students fell in the upper 25% of the class distribution on both dimensions and were described as highly successful. The intermediate group numbered 110 students which comprised the middle 50% of either or both distributions, and there were 20 students who formed the marginal success group, or represented the lower 25% of the class on both dimensions (see Table 1).

RESULTS

Criteria for selection of medical students, or preadmission variables, predicted performance in the basic science years with 44% accuracy. That is, 44% of the class were identified in terms of high, intermediate, or marginal success groups for the basic science requirements. Maximum accuracy in classification was achieved after consideration of undergraduate GPA, MCAT Verbal score, MCAT Science score, and undergraduate science GPA. There was a 59% accuracy rate in predicting the high success group, a 25% rate for the intermediate group, and a 69% rate for the marginal group. When the same preadmission criteria were used to predict performance levels on clinical rotations, a 41% overall accuracy rate was found with maximum classification based on MCAT Total, undergraduate GPA, undergraduate science GPA, and remaining variables. Discriminant function analysis accurately classified 66% of the high success group, 33% of the intermediate group, and 50% of the marginal group.

When preadmission criteria were combined with basic science GPAs earned in the first two years of medical school and National Board scores to predict clinical performance levels in the third year, 50% of students were accurately assigned to their groups. The best rate of prediction was again found for the high success group with 72% of students correctly assigned, and 45% of students were accurately assigned to both intermediate and marginal success groups. Maximum classification was achieved after consideration of basic science GPA, MCAT Total, National Board scores, and six remaining variables in that order. Basic science and clinical GPAs were also significantly and positively correlated ($\underline{r} = .64$, $\underline{p} < .001$), showing a strong rela-

TABLE 1

CLASSIFICATION OF STUDENTS INTO SUCCESS GROUPS

ACCORDING TO PERFORMANCE ON BASIC SCIENCE AND CLINICAL CRITERIA

SUCCESS GROUP	BASIC SCIENCE		CLINICAL	
	No.	Percent	No.	Percent
High	41	24	29	18
Intermediate	89	52	110	69
Marginal	42	24	20	13
TOTAL	172	100	159	100

tionship between performance in the two areas.

When personality characteristics were used as predictor variables for clinical performance, accuracy of prediction rose to 68%. This amounted to 71% in the high success group, 67% in the intermediate group, and 73% in the marginal group. Prediction was even more significantly improved when personality characteristics were combined with GPAs earned in the first two years of medical school. Such variables as basic science GPA, Exhibition, Lability, Heterosexuality, Self-control, and Endurance were weighted as most important in discrimination. There was a 73% overall rate of accuracy of prediction with 82% of high, 70% of intermediate, and 73% of marginal success groups correctly identified (see Table 2).

TABLE 2

SUMMARY OF PREDICTIVE RESULTS SHOWING PERCENT OF STUDENTS ACCURATELY CLASSIFIED IN THREE SUCCESS GROUPS

CONDITION	SUCCESS GROUP		
	Marginal	Intermediate	High
Preadmission criteria to predict 1st 2 yrs. Overall success - 44%	69%	25%	59%
Preadmission criteria to predict 3rd yr. Overall success - 41%	50%	33%	66%
Preadmission criteria plus performance in 1st 2 yrs. to predict 3rd yr. Overall success - 50%	45%	45%	72%
Personality characteristics to predict clinical performance Overall success - 68%	73%	67%	71%
Personality characteristics plus performance in 1st 2 yrs. Overall success - 73%	73%	70%	82%

DISCUSSION

Results are consistent with findings which suggest that prediction of medical student performance using preadmission criteria is relatively unimpressive[1, 2, 6] but do not support the assumption that it becomes less effective with progression through medical school. Predictive power afforded by preadmission variables remained essentially the same across basic science and clinical performance criteria, and the three most powerful variables for forecasting degree of success were undergraduate GPA, MCAT Total, and undergraduate science GPA. However, such factors either in combination or alone could not identify students in success groups across basic science or clinical performance categories with greater than 50% accuracy.

The positive relationship found between performance in basic science courses and clinical rotations suggests that good students in the basic sciences are quite likely to receive high grades and be described by favorable comments on clinical core assignments. When preadmission criteria were combined with measures of performance during the first two years, the rate of prediction rose slightly but not impressively. While these data imply that the student who performs well in the first two years of medical school or in basic science courses will also perform well on clinical core rotations, prediction of successful clinical performance from that defined as marginal in the basic sciences was poor.

The firmest support for using potentially available data to predict medical school performance, particularly on clinical assignments, was provided by use of personality test measures. When scores on personality dimensions were used alone to predict clinical performance, a prediction rate of 68% was achieved. When personality variables were combined with measures of performance in the first two years of medical school, the overall prediction rate increased to a high of 73% with relatively accurate prediction in all three performance categories. Although prediction was always more accurate for the high and marginal success groups than for the intermediate group, psychological tests enhanced predictability in the intermediate group. This finding is in contrast to other methods of prediction which achieve separation of the very good student from those who are very poor but are less effective in identifying average students. Results are consistent with reports of other investigators[7, 8] who found personality measures of value in predicting student outcome. That use of personality variables alone allowed better prediction of clinical performance than scores on conventional tests may lend support to the frequent observation that a good physician requires certain personality characteristics in addition to the quality of being an excellent student. Tendencies toward exhibitionism, aggressiveness, autonomy, aloofness, need for achievement, and personal dominance were more characteristic of students who were highly successful in terms of clinical performance.

SUMMARY

Prediction of successful performance in medical school in both basic science and clinical areas has been relatively unimpressive when preadmission aptitude and achievement variables were used as criteria. In contrast, use of nonintellectual or personality test measures was found to enhance prediction of success on clinical assignments, whether used alone or in combination with performance data. Additional research is needed to specify the nature of relationships between personality characteristics and medical student and physician success, particularly in terms of clinical performance. However, this mechanism may prove to be an important addition to the evaluation process for medical students and lead to a more effective identification of students most likely to succeed. ☐

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Editorials

PERSONALITY AND MEDICAL STUDENTS

The functions of few committees rival the importance of those that determine who will be our future physicians. The paper by Sutker, Newberry, and Bradham in this issue of *The Journal* seems to us to be a substantial contribution to the literature dealing with how medical school admission committees might function more objectively.

Although the authors indicate that "efforts to predict medical student or physician success with certain nonintellectual variables such as personality characteristics" are relatively recent, the underlying concepts are old ones. Over a century ago, the British surgeon, Sir James Paget, traced the careers of 1000 of his former pupils. Of these 1000 pupils, 23 achieved distinguished success, 66 achieved considerable success, 507 achieved fair success, 56 failed entirely, 96 left the profession, 87 died within twelve years of commencing practice, and 41 died during pupilage. Paget commented that "the personal character, the very nature, the will" must be strong if the student were to survive and to achieve success during medical school and during professional life.

Recently, a similar study was made of 1337 medical students at the Johns Hopkins University School of Medicine.[1] It was found that 3.1 percent of the graduates, and alarmingly 11.2 percent of the non-graduates, died prematurely. Incipient mental illness and emotional disturbance appeared to have contributed substantially to academic failure, poor performance during and after medical school, and premature death. The author concluded that "psychological stamina is of vital importance to the entering medical student if he or she is to reach the goal of becoming a sound physician," and that "poor self-image, damaged self-esteem and covert depression, anger, and fear take their toll when certain students undergo the pressures of medical school."

How do undergraduate students who gain entrance to medical schools differ from their peers, both during college and at long-term follow-up? Over 30 years ago, a prospective study of 268 college sophomores was begun at a leading Eastern university.[2] Of these 268 men, 47 attended medical school and 46 graduated. These 47 men were compared to a group of 79 men who sought other careers, and who were matched socioeconomically for control purposes.

Bad marriage or divorce characterized 47 percent of the physicians, compared to 32 percent of the controls. Excessive or high use of drugs characterized 36 percent of the physicians, compared to 22 percent of the controls. Of the physicians, 34 percent had seen a psychiatrist for 10 or more visits, compared to 19 percent of these controls. All of these findings were significant at the $p < 0.1$ level.

Apologists for physicians offer several explanations. Bad marriages reflect the long hours and the demands of patients; medical practice drains one's emotional resources, leaving little for spouse and family. Drug abuse reflects the physician's ready familiarity with and access to these agents which might help — temporarily — in coping with the fatigue which threatens occupational efficiency. Psychiatric visits reflect awareness; physicians may recognize their symptoms earlier than most people. Nevertheless, there is another viewpoint — and here, the observations by Sutker and colleagues gain relevance.

This viewpoint holds that physicians — those who competed successfully during college for entry into medical school — tend to be high achievers, and that motivating factors behind their achievement include, often, factors such as low self-esteem which may later, in the context of an open-ended occupation, doom them to maladjustment. The familiar type A personality may be useful for earning a high mark in organic chemistry, but may later lead to the serious syndrome of "overwork," recently defined as "working beyond one's endurance and recuperative capacities," "a hazard in certain personality types engaged in open-ended occupations."[3] Thus, the ability of objective parameters, even if "nonintellectual," to predict the problems of such individuals early would be useful, both to the medical school, the individual, and society.

Some of the conclusions of Sutker and colleagues seem, however, alarming. They noted that reliance on personality variables *alone* enabled better prediction of medical student performance during the clinical years than did the results of conventional objective tests. They also noted that specific personality traits seemed to correlate with success. "*Tendencies toward exhibitionism, aggressiveness, autonomy, aloofness, need for achievement, and personal dominance were more characteristic of students who were highly successful in terms of clinical performance*" (italics mine).

The authors note carefully that additional research is needed. Much anecdotal support for their observations could, of course, be gleaned from published and unpublished observations. Sixty-three years ago, an editorial entitled "Personality and Practice" appeared in these pages, the author noting the following:

> "The astonishing way in which some men, who left medical schools with seemingly the least possible acquaintance with medicine, suddenly spring into practice, usually seems unaccountable. . . . To the more earnest and thorough students, it seems puzzling that the superficial should succeed so well. There is one explanation that covers it all. The success is due to the peculiar personality of the practitioner. . . . This personal touch, this psychic appeal to the patient and his friends, is not to be neglected by the scientific; it is a part of the practice of medicine . . . a part [which] should not be overlooked. . . ."[4]

More recently, an editorial writer in these pages noted:

> "The pressures of modern living and modern practice are causing very unpleasant effects upon our doctors. They display too much impatience, too much irritability, too little self control, and too little of the 'milk of human kindness.' To be a good physician, someone has said, one must be a good and kind man."[5]

"Nothing," said the late Charlie Chaplin, "transcends personality." The observations of Sutker and colleagues make this seem to be true of performance during medical school. Nevertheless, one must share the sentiments of the recent British writer who noted that "one of the great attractions of the medical profession is that it can assimilate such a diverse range of personality types."[6] Not all patients would necessarily prefer that their physician manifest the tendencies which seemed to characterize the high performers in the study reported in this issue. There is room for diversity, and hopefully such diversity will increase with the increasing output of new doctors.

— CSB

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THE JCAH AND ORGANIZED MEDICINE

So numerous are the regulatory agencies now involved in health care that it is often difficult to remember *who* represents *what*. One such agency is the Joint Commission for Accreditation of Hospitals, commonly known as "the JCAH." A visit by the JCAH prompts considerable preparatory activities, for it is well known that being "accredited" *matters* to the hospital and to the community, and it is also well known that the inspecting team is likely to leave no stone (or chart, for that matter) unturned.

But *whom* does the JCAH represent? The organization is composed primarily by four bodies representing "organized medicine" — the American Medical Association, the American College of Physicians, the American College of Surgeons, and the American Hospital Association. *Numerous* other organizations, representing almost every conceivable group within medicine, provide input and influence.

Having recently heard a spokesman for the JCAH discuss some of the issues before us, this editor was impressed by several points. First, JCAH has been evaluating quality of hospital-based health care delivery since 1918, making constructive recommendations long before Congress began to do so through the Medicare Act. Secondly, the JCAH has been concerned with peer review long before the advent of PSRO; the spokesman asserted that "peer review has been a way of life for doctors since the time of Hippocrates." Finally, the JCAH has consistently shown its concern about the problem of cost versus quality, while adhering to the basic premise that we must not compromise quality when it really matters.

"Liberty," concluded the spokesman, "is the luxury of self-discipline." One concluded that, while the JCAH like any other organized body may have its shortcomings, it nevertheless represents the best tradition of the ability of organized medicine to be self-critical. Constructive self-criticism can promote both quality of care and cost containment. Organized medicine *can* regulate itself, but will need the increasing participation by physicians if such regulation is to prove effective.

— CSB

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The Journal of the South Carolina Medical Association

LETTERS TO THE EDITOR

To the Editor:

We were quite pleased to see the publication of our article "Open Heart Surgery in the Community Hospital: 100 Consecutive Cases without Mortality" in the February issue of *The Journal of the South Carolina Medical Association.*

I now realize that a singular omission was made when appropriate credit was not afforded to the integral role played by the anesthesiologists and the extra-corporeal perfusion technologists in this successful effort.

The surgical team in open heart surgery is comprised not only of surgeons but anesthesiologists, perfusion technologists, scrub and circulating nurses all of whom contribute their varied talents interdependently to the safe conduct of the cardiac patients through a critical, complex operative procedure.

Our article was offered without appropriate appreciation and recognition being given to these diverse talents, and I would like to take this opportunity to rectify that omission.

Peter Hairston, M.D.

To the Editor:

A recent item from the Center for Disease Control (Current Item #259, dated March 15, 1978) has been received by the Bureau of Laboratories, South Carolina Department of Health and Environmental Control. This publication includes considerable information about the values of various tests used in the diagnosis of infectious mononucleosis and presents the CDC's criteria for accepting specimens for Epstein-Barr virus (EBV) antibody determination. Since the diagnosis of infectious mononucleosis is a common clinical problem it might be of value if this information were available to the practicing physicians of South Carolina. The communication is brief and I will quote it in its entirety.

> "For the past six years the Bureau of Laboratories has compared the Ox-Cell Hemolysin test, the Heterophile test, various infectious mononucleosis (IM) slide tests, and the Epstein-Barr (EBV) Fluorescent Antibody (FA) test. Our results indicate that the Ox-Cell Hemolysin test, the Heterophile test, and the IM Slide Kit test, are reliable as diagnostic procedures for IM. All of these procedures indicate recent IM, and have yielded minimal false positive or false negative reactions. We recommend that laboratories performing many tests for IM use the Ox-Cell Hemolysin, or Heterophile test and that laboratories testing only a few specimens use an IM Slide Kit. This testing should be done locally, that is, in the hospital laboratory or the physician's office instead of in a distant laboratory.
>
> The EBV-FA test is an excellent epidemiological tool for studying previous exposure to EBV infection, since one infection with EBV usually causes antibody to be present for life. Long-term antibody persistance also means that the EBV-FA test has limited diagnostic value. It can be of value, however, under certain conditions. We will accept specimens for EBV-FA tests if:
>
> 1. The patient is six year of age, or less.
> 2. The illness may be Burkitts lymphoma or nasopharyngeal carcinoma.
> 3. Differentiation between IM and possible leukemia is required.
> 4. IM with neurotropic involvement or unusual complications is suspected.
>
> Paired sera and complete patient history must accompany all specimens submitted if serological results are to be properly evaluated. The history should include — age and sex of the patient, date of onset, clinical diagnosis, associated illness, results of previous IM serology, and other appropriate clinical data.
>
> Inquiries on the EBV-FA test or the criteria for performing the test should be addressed to: Center for Disease Control, attention Dr. Paul M. Feorino, Chief, Viral Oncology Branch, 7-SB45, Virology Division, Bureau of Laboratories, Atlanta, Georgia 30333."

The Division of Diagnostic Microbiology, Bureau of Laboratories, South Carolina Department of Health and Environmental Control provides the Ox-Cell Hemolysis test and one of the slide tests for the diagnosis of infectious mononucleosis for those clinicians without access to a local laboratory facility. We will continue to provide the services we have provided in the past, but if a request for EBV antibody is made it must meet the criteria established by the CDC or it will not be accepted by that unit. I hope this information will be of value to the Journal's readership.

Harold Dowda, Jr., Ph.D., Director
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MEETING ANNOUNCEMENTS

1978 SCMA MID-WINTER MEETING: Now that the 1978 Annual Meeting has come and gone, the SCMA leadership urges you to mark your calendars for the 1978 Mid-Winter Meeting of the House of Delegates, to be held at the Hyatt on Hilton Head Island, S. C., November 3-5, 1978.

* * * *

S. C. HEART ASSOCIATION ANNUAL ASSEMBLY: The S. C. Heart Association announces its 1978 Annual Assembly and Scientific Sessions, to be held June 15-18 at the Sheraton Motor Inn in Greenville, South Carolina. The program has been designed with appeal to physicians, nurses, technologists and laymen. An added feature this year is a Clinical Cardiology Session, with the presentation and discussion of clinical cases. For registration forms, contact the S. C. Heart Association, 5868 Percival Road, Columbia 29206.

* * * *

NEUROLOGY FOR INTERNISTS AND FAMILY PHYSICIANS: The American College of Physicians will sponsor a four-day post-graduate course, "Neurology for Internists and Family Physicians," in Winston-Salem, N. C., May 30 to June 3, 1978.

* * * *

OFFICE DERMATOLOGY: A postgraduate course for physicians in "Office Dermatology," will be held May 4-6, 1978 at the Omni International Hotel in Atlanta. The object of the course is to provide primary care specialists with information to correctly diagnose and treat the most common skin disorders encountered in office practice. For further information, write American Academy of Dermatology, 820 Davis Street, Evanston, Illinois 60201.

President's Page

Publication schedules — copy deadlines — are obviously necessary for our journal, but they do make it difficult for the President to write a timely message, particularly his first one. Perforce I am writing this at the end of March, a month before I am installed as President, and before I can know, or even guess, the actions taken by the House of Delegates at the Annual SCMA Meeting. I will try, nevertheless, to make my comments pertinent.

First, let me express my sincere appreciation for the honor of serving the Association. With the help and cooperation of all members, we can continue the forward strides of recent years. As this reaches your office, Council and your President will be working diligently on Committee assignments for the year. If you are called upon, please accept graciously and make a serious commitment to do the best job possible. If you wish to serve the Association, and have not yet been asked, you are urged to let the SCMA office know your willingness, and your particular field of expertise or interest, so that you may be considered for an appropriate committee position.

We owe a great deal to those who have led us during the past year. Unless you have been close to the scene of action yourself, it will be hard for you to conceive of the time and effort which they have expended in behalf of the Association. I will not name them all, but would like to pay special tribute to the following:

> Waitus Tanner, whose year as President has been far from dull. His frequent appearances before committees at the State House and before numerous governmental and other bodies have made him indeed the foremost figure of medicine in South Carolina. He has spoken fearlessly and forthrightly, reflecting great credit upon our profession.
>
> Halsted Stone, a big man with a big job as Chairman of Council. He, too, has become a familiar and respected figure, representing the SCMA.
>
> Ernie Lathem, who has now decided to step down as Treasurer of the SCMA. He, in my judgment, is largely responsible for the firm financial footing which the SCMA now enjoys. His wise counsel and judgment will be sorely missed by the Council and Executive Committee of the Association.
>
> Strother Pope, our familiar face at the Legislature. More than anyone else in the state, he is responsible for the improved relations between the SCMA and the Legislature. We have not achieved all that we desire — and we never will — but our substantial progress is largely the fruit of his efforts. Our debt to him is immense.

All those enumerated above, as well as the other leaders of the SCMA, will agree completely that their accomplishments would have been few without the backup of the dedicated, hard-working staff. Charlie Johnson has put together a first-class, efficient team, and we are grateful for their outstanding work.

We have a big year facing us. I hope that all physicians in South Carolina will join me in working diligently for the good of our profession, and even more importantly for the health of our patients.

JOHN C. HAWK, JR., M.D., *President*

AUXILIARY PRESIDENT'S PAGE

REPORT OF THE PRESIDENT OF THE AUXILIARY TO THE SCMA HOUSE OF DELEGATES

April, 1978

The theme for the 1977-78 South Carolina Medical Association Auxiliary was "NEW DIRECTIONS — IN UNITY, THERE IS STRENGTH."

We are most appreciative of the guidance and support the SCMA gave us throughout the year with our endeavors. We have reached the goals of our new directions through education and the faithful service of the entire membership. It has been in this UNITY that we found STRENGTH to fulfill our goals.

Continuity was no problem as each county met the needs on a local level providing the following services: help for the aging with recreation, entertainment, companionship, telephone assurance, Meals on Wheels, escort service, education in cancer detection, cooking and Bible study; Blood Mobile, Pap Mobile, Hypertension screening, eye and ear screening tests; courses in cardio-pulmonary resuscitation; mental health programs; volunteers for pediatric clinics and for local hospitals; retarded and crippled children projects; child protection programs with emergency shelters being provided in many counties to meet the need; immunization programs; showing films and giving talks to youth in school; safety in the home and poison programs; Parent Anonymous and parenting programs; health careers rallies and fairs; cancer Reach to Recovery program; and the Heart Fund program.

The Benevolence Fund to aid spouses of deceased physicians was supported by 12 counties with contributions of $347.50 as of April 1st. All members supported the Student Loan Fund and the Health Careers Fund. Four young men are currently receiving financial assistance at the University of South Carolina through the State Loan Fund, and three new loans have been requested this Spring. Several counties are giving scholarships to students in allied health fields.

Three new auxiliaries, Dorchester, Union and Allendale-Hampton, have been added and more than 400 new members. Sincere efforts were made to become better acquainted with interns' and residents' spouses and to create friendliness among physicians' families.

AMA-ERF, through the sale of optic arts, Christmas sharing cards, stationery, jewelry/novelty items, contributions through memorials, had total contributions of approximately $25,000.00 as of April 1. The majority of these funds have been earmarked to be returned to medical schools in South Carolina.

Legislation has kept LEGS ALERT ready to move on a moment's notice. It has promoted programs and information on important issues and bills before Congress. The newest program was LADY TO LEGISLATURE (plan to get names of U. S. Senators, Representatives, County and local officials to the local member). Auxiliary and Society members engaged in writing letters and attending a conference in Washington in reaction to HEW National Health Planning Guidelines. The result was the rewriting of the Guidelines. Membership in SOCPAC and AMPAC was promoted. Speakers and tapes on Malpractice were made available.

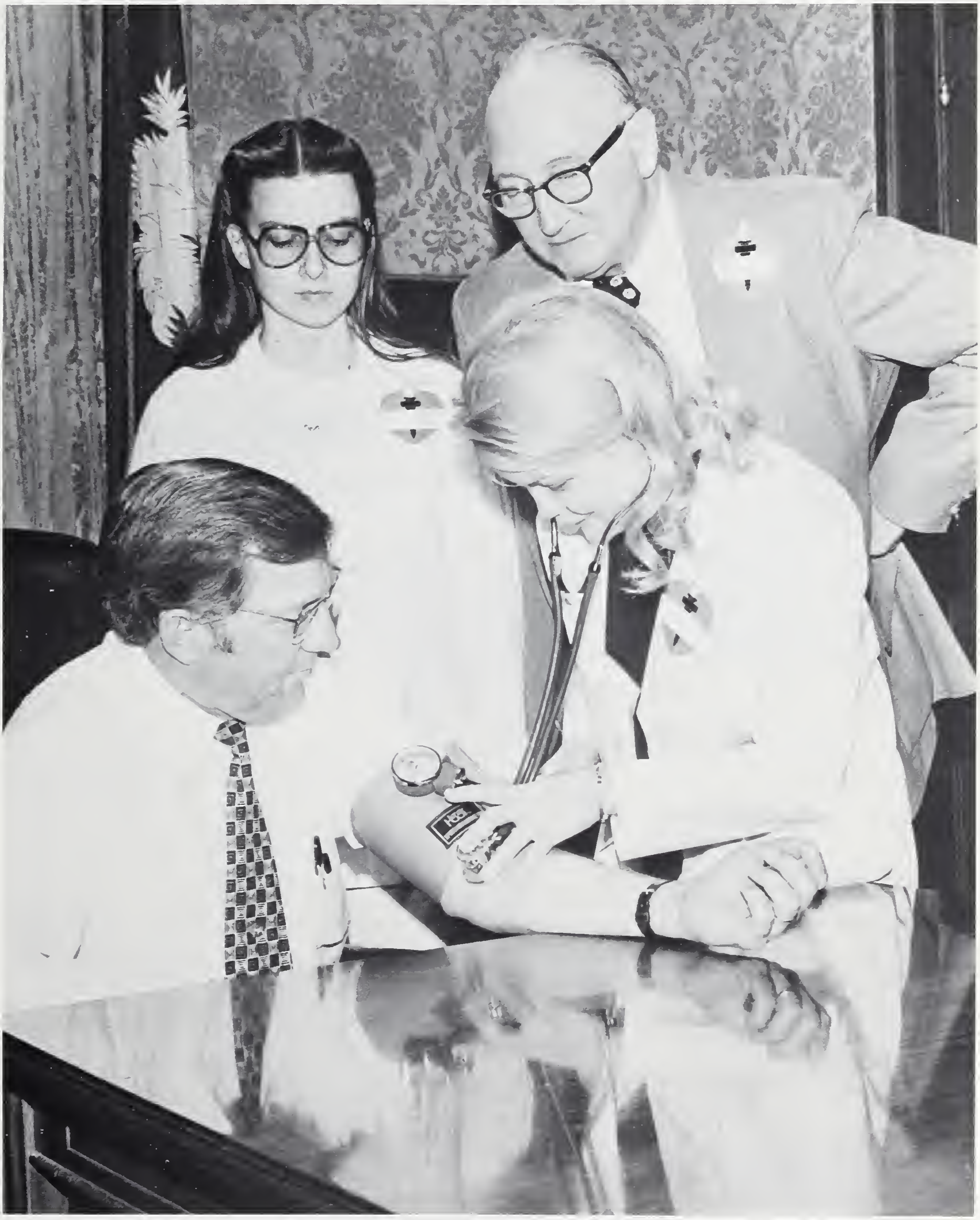
Communications for informing self and others were the Committee on Communications and Publicity, Auxiliary News, FACETS, State Newspaper reports and county newspapers, along with speaker bureaus available to County Medical Auxiliaries, Civic Clubs and Schools.

These are only a few of the outstanding contributions that the members of the SCMA Auxiliary have made to improve the quality of life through health education and services. Members of the SCMA Auxiliary have achieved their goals in 1977-78 by taking time to think, to read, to pray, to love and be loved, to work and to do charity.

IN UNITY, THERE IS STRENGTH.

MRS. RUFUS H. CAIN, JR., *President*
SCMA Auxiliary, 1977-78

SCMA DOCTOR OF THE DAY PROGRAM



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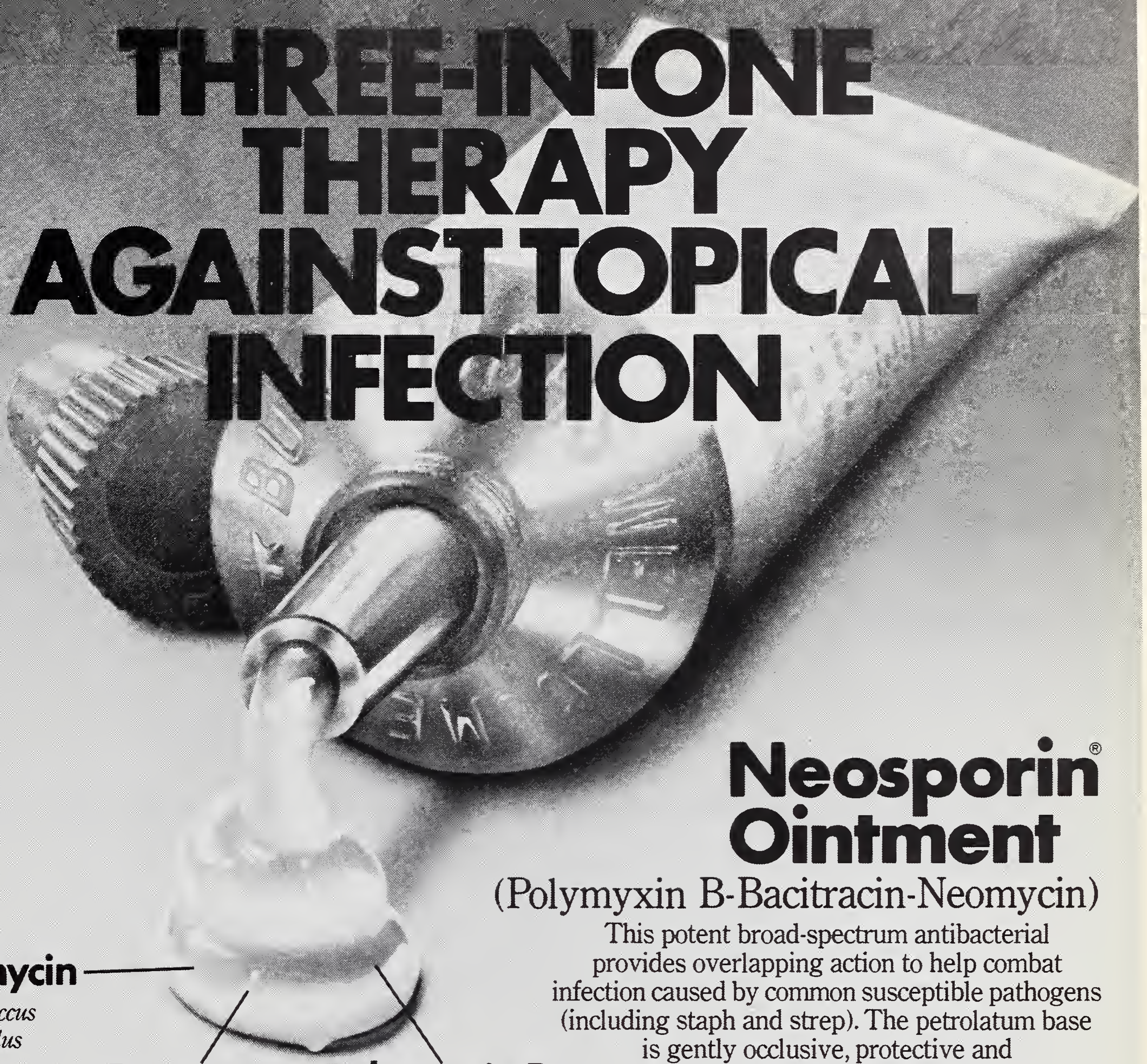

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Complete literature available on request from Professional Services Dept. PML.

THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 JUNE 1978 NUMBER 6

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

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THE JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 JUNE 1978 NUMBER 6

USE AND MISUSE OF PSYCHOTROPIC DRUGS: A CURRENT PERSPECTIVE*

I. JOSEPH McFADDEN, M.D.**

Psychotropic medications include those drugs which are used in the treatment of a variety of emotional or mental conditions ranging from transient situational anxiety or depression to the major psychotic states of schizophrenia or manic-depression. Each psychotropic drug when properly prescribed can provide benefit. However, when prescribed for the incorrect condition or in the incorrect dosage, they can be worse than nothing at all. The major categories of psychotropic medication and the general conditions with which they are used will be reviewed, as well as the potential for misuse or abuse and potential side-effects.

MINOR TRANQUILIZERS

Minor tranquilizers are among the most widely prescribed group of drugs in medicine.[1] The popularity of use of these compounds is substantiated by the recent market entry of a variety of new benzodiazepines. The older members of this group include chlordiazepoxide, diazepam, oxazepam, etc. All of these compounds are effective in decreasing anxiety. None has ever been shown to be significantly more effective than another. Differences in the drugs lie with differential properties of absorption, metabolism, half-life, etc. In addition to decreasing anxiety most have sedative, anticonvulsant and muscle-relaxant properties.[2] Similar properties are shown by meprobamate, a propanediol, another category of minor tranquilizer chemically distinct from the benzodiazepines. Different in their properties are certain anti-histaminic compounds with tranquilizing properties such as hydroxyzine. Less popular with patients, they are none-the-less useful, and should be considered for use because they are non-addicting. *Without exception, virtually all of the benzodiazepine compounds and meprobamate are potentially addicting.* Perhaps no other group of currently prescribed drugs has such abuse potential as the minor tranquilizers. The source of this abuse and misuse apparently derives in part from the same effect, which is therapeutic — the diminution or relief of anxiety, and with sufficient dose, a sense of being "high," and sedation. It should be remembered that alcohol is also a "tranquilizer" (CNS depressant) which many people use. The similar potential for abuse, over-use and addiction is obvious. Unfortunately, the pharmacological treatment of anxiety relieves a symptom, but does nothing for the underlying cause. This may be appropriate in transient situational, stressful or depressing conditions which by their nature are time-limited. In those conditions or emotional states in which there is a chronic source of stress or anxiety, such as dissatisfaction with marital or work relations, inability to function satisfactorily in school or in social situations, chronic endogenous depression, borderline personality disorganization or psychotic states, the use, or continued use, of minor tranquilizers is generally contraindicated. Their use in such cases may provide temporary relief, but the usual course is one of escalating dosage and decreasing effectiveness over a period of time. Physiological, as well as psychological, dependence develops. Discontinuing the drugs abruptly, at even moderate dose levels, can produce withdrawal symptoms in some patients. Their use over extended periods often delays institution of proper therapy. Also reported are cases where minor tranquilizers, through an anxiety-inhibiting effect, release hostility and rage in certain patients. The combination of minor tranquilizers with alcohol has an increased potential for mortality. Consequently, the use of meprobamate or a benzodiazepine derivative for longer than a few weeks warrants referral for psychiatric consultation for further diagnostic evaluation and appropriate treatment.

---

* From the Psychiatry Service, Veterans Administration Hospital, Columbia, S. C. 29201

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MOOD ELEVATORS AND STABILIZERS

Although both minor and major tranquilizers may at times be used in the treatment of depression and/or manic episodes, such treatment generally is not considered the correct way of managing these conditions. Endogenous unipolar depression is now treated most frequently by the use of tricyclic antidepressants such as imipramine, amitriptyline, doxapin, or metabolites of these parent compounds. In depression sufficiently severe to warrant the use of these drugs, dosages gradually increased over a one to three week period to at least 150 mgm/day is necessary to produce relief. It should be remembered that a patient may need to be on this dosage for up to three weeks prior to significant clinical improvement. Insufficient dosage is perhaps the most common cause of treatment failure in cases where these are the appropriate drugs.[3] Unfortunately, the problem with differential diagnosis complicates therapy. In cases where the depression is secondary to other physical or emotional conditions, antidepressants may be ineffective or even worsen the condition. The strong anticholinergic properties of many of these compounds is a significant factor to warrant caution in their use in certain patients. Anxiety, agitation, restlessness, delirium, EKG changes, hypotensive episodes, dry mouth, constipation, etc., may result from the use of these drugs.

The mono-amine oxidase inhibitors are also effective but potentially toxic or lethal drugs used in depression. The so-called "cheese or wine reactions" which can be productive of hypertensive crises in patients on MAO inhibitors have limited their acceptability and use. Foods containing the amino-acid tyramine or drugs which are pressor amines must be avoided in those patients taking MAO inhibitors.

Lithium carbonate is the treatment of choice in manic-depression or bipolar affective disorder. This treatment, while highly effective, requires careful lithium plasma-level monitoring and is generally carried out under the supervision of a psychiatrist trained or experienced in chemotherapy.

The use of stimulant medication such as amphetamine or methylphenidate is not acceptable in the treatment of depression. The euphoric effect which is produced is transient and escalating doses are needed to maintain elevated mood. With sufficiently high dosage, psychosis may be produced.

The treatment of depressive disorders is further complicated by the fact that clinically similar types of depression may respond to different antidepressant medication. The bipolar or manic-depressive types respond best to Lithium. One unipolar type of depression may respond to an antidepressant raising plasma norepinephrine levels while another responds best to one which increases plasma serotonin levels.[4] Often, this is discerned only from trial and error, a lengthy and expensive process for which, outside the experimental laboratory, there is no known solution. With all types of depressive illness requiring chemotherapy, the question of maintenance therapy is raised. Discontinuance of medication significantly increases the probability of reoccurrence of either depression or mania. The effectiveness of maintenance treatments provides the potential for a preventive approach to the treatment of affective disorders.[5]

NEUROLEPTIC DRUGS

The major tranquilizers all probably exert an antischizophrenic action through a common mechanism, that of blockade of dopamine receptors in the brain.[6] Although there is now a wide choice of different classes of neuroleptics, it should be recognized that due to their common mechanism of action no conclusive evidence has shown any one drug superior to any other. Their differences in clinical action and effect appears related to two properties: potency and anticholinergic effect. The more potent phenothiazines, butyrophenones, etc., require lower dosage, are less sedating, and produce more extrapyramidal side effects. Certain drugs such as thioridazine and clozapine have high anticholinergic properties which result in a lower incidence of extrapyramidal side effects. They are more problematic as far as side effects such as blurred vision, constipation, EKG changes.

The antipsychotic class of drugs, more than any other modality of treatment, has had more effect in making schizophrenia a disease which now can be treated on an ambulatory, outpatient basis, as opposed to chronic institutionalization. These drugs are not simply sedative or "tranquilizing," but appear to alleviate the core symptoms of the schizophrenic condition. Social withdrawal, hallucinations, disorganization of thought process are all improved by these drugs. The clinical effect is such that abuse is almost nonexistent with their use. They are not productive of "highs." The common side effects of extrapyramidal symptoms such as restlessness, tremors, etc., can generally be managed by the transient addition of antiparkinsonian drugs.[7]

The most serious side effect, and one now severely limiting the use of these drugs, is tardive dyskinesia, in which choreiform movements of the mouth, tongue, jaw, and, at times, part of the extremities, develop. This condition theoretically develops after chronic blockade of neuronal dopamine receptors. There results a state of supersensitivity to dopamine or a functional disturbance in the dopamine/acetylcholine balance in the basal ganglia of the brain. Unfortunately, the condition at times can be both severe and irreversible. It also is exacerbated by the use of antidepressants, antihistamines, or other anticholinergic drugs.[8] The question of appropriateness of long-term or maintenance chemotherapy in chronic schizophrenia remains to be answered. While long-term usage of these drugs may produce a tardive dyskinesia syndrome, discontinuance may produce an exacerbation of the psychosis. Certainly, the use of major tranquilizers in the treatment of anxiety or depression, where schizophrenia is not present, must now be seriously questioned — with major medico-legal implications.

CONCLUSIONS

The use of chemotherapy in the treatment of emotional disorders has significantly improved the prognosis and quality of life for patients suffering from schizophrenia, the affective disorders, and anxiety. None of these treatments is without rather serious potential for either abuse or toxicity. Addiction potential with minor tranquilizers, movement disorders with long-term use of antipsychotic medication, confusion over diagnostic subtypes of depression, dosage level and toxic effects of antidepressants must all be considered in psychopharmacology. With all the advances in chemical treatment in psychiatry, electroconvulsive therapy, family therapy, behavior therapy, etc., may be the treatment of choice, or part of the needed treatment. No single medication is likely to be all that is required in treatment of a persistent emotional problem. ☐

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EXPERIENCE WITH JAMSHIDI NEEDLE BIOPSY OF MARROW IN A COMMUNITY HOSPITAL*

JACK L. COLLINS, M.D.

In 1971, the Jamshidi needle for bone marrow biopsy was introduced.[1] Its tapered end allows the specimen to enter and become trapped in the lumen. The resulting 2 mm. cylindric specimen is intact and larger relative to the smaller and often crushed or fragmented specimen from Vim-Silverman Needle types. This report will offer a review of 165 cases and comments on techniques not covered in the original article.

MATERIALS AND METHODS

Jamshidi needles and materials for manual resharpening are available from Kormed Incorporated, 2950 Metro Drive, Minneapolis, Minnesota 55420. The author initially gained experience with bone landmarks and the use of the needle on cadavers. A study of a skeleton would be very helpful to understand the proper needle direction (aiming for an interior iliac spine). The procedure is outlined in the literature shipped with the needle and in the original paper on this needle.[1]

The author (right-handed) prefers the left lateral decubitus position for the patient. However, bilateral biopsies are desired when staging for Hodgkin's disease or to maximize yield when looking for metastatic carcinoma. In such instances, the patient lies prone and both posterior superior iliac spine sites are "prepped." Marrow aspirate is first obtained by a large gauge Turkel needle. For biopsy of adults, the 4 inch, 8 gauge Jamshidi needle is preferred over the 11 gauge as fragmentation occurs less, specimens stay in the needle better, and there is more material to study. For patients with marked obesity, a 3½ inch spinal needle, 22 gauge can be used to find the posterior iliac spine, as well as for local anesthetic injection. The 6 inch orthopedic Jamshidi can then be used to reach an otherwise inaccessible site. Use of 4 x 4 inch gauze will improve grip of the needle (although the reader may wish to have an adapter made).[2]

Formalin was mostly used for fixation, although Bouin's is faster and, after processing, easier to section on a microtome. The biopsies remain in Bouin's for two hours or longer. Decalcification is with RDO* for a minimum of thirty minutes, but preferably one hour. Specimens are briefly rinsed in tap water. This approach allows an afternoon biopsy to be processed and sectioned the following morning.

The incision wound is covered with two folded pieces of 4 x 4 inch gauze and held down from the pressure of a strip of 4 inch wide elastic tape.

RESULTS

The author began using the Jamshidi needle biopsy on November 1, 1974. By December 8, 1975, 110 marrow studies had been done; 74 included biopsies (67 percent). With careful record of the number and length of biopsy specimens, 55 subsequent studies were obtained from December 8, 1975 to August 8, 1976. This included 40 with biopsy (69 percent). The group of 55 marrow studies were:

No. of Biopsies Taken	*No. of Cases*
1	6
2	17
3	12
4	3
5	2

---

* From the Department of Pathology, Self Memorial Hospital, Spring Street, Greenwood, South Carolina 29646

* DuPage Kinetic Laboratories Incorporated, P. O. Box 416, Downers Grove, Illinois 60515

Except for a 9 mm. biopsy of a soft mass of Hodgkin's lymphoma arising from the sternum, the biopsies range from 15 to 50 mm. in length (combined length in case of multiple biopsies). The average total length was 32 mm. per case study.

Of the 165 cases, 114 were biopsied. However, there were four patients (2 percent) on whom biopsy was desired but not obtained. In one case, the patient would not allow the biopsy. In three, biopsy could not be obtained for technical reasons (obesity).

In the group of 55 cases, there were nine instances where the biopsy was essential. This was for one of the following reasons. Aspirate was not obtained ("dry tap"); there was excessive dilution of marrow; or the smears failed to show the pathology demonstrated by biopsy. Biopsy was essential with some cases of myelofibrosis (3), metastatic carcinoma (2), myeloma (2), minute granulomata compatible with brucellosis (1), and malignancy suggestive of Hodgkin's disease (1). These instances are similar to the experience of others.[3] In seven cases, cellularity was important in the clinical need for the marrow study and is best evaluated by biopsy rather than from clot preparation of smear spicules.[4] Thirteen cases were for exclusion of metastatic carcinoma, lymphoma, or fungal infection. The biopsy was done to achieve the highest possible yield of diagnostic tissue.

Although most of the patients were adults, the youngest was only five years old.

DISCUSSION

The Jamshidi needle was found to be inadequate for a marrow aspirate. This related to excessive dilution by peripheral blood. Excessive hemorrhage in Jamshidi biopsy was not a common finding, possibly because an aspirate was obtained from a slightly different site by the smaller Turkel needle. Others have reported excessive hemorrhage in a biopsy as a foremost cause of inadequacy in their biopsy specimens.[5]

The biopsies were fixed in either formalin or Bouin's. The latter was used for rapid fixation so that the biopsy could be available for reading the following morning. B-5 fixative seemed to make the biopsy specimen too hard for easy microtome sectioning. (Zenker's could be expected to give excellent cytologic detail, but was not used. Cal-Ex™ II by Fisher Scientific Company was not evaluated fully.)

The author prefers a minimun of 25 mm. total length of specimen to have confidence that the material will be adequate.

When "dry taps" are encountered, one should consider touch preps from the biopsy specimen. The imprints may better demonstrate cytologic features difficult to see in a histologic section of the biopsy material.

Rarely, we sedate adults prior to biopsy. Always, this is primarily to reduce anxiety. Frequently, these patients had experienced marrow aspiration and/or biopsy previously. With children, we always administer sedatives.

The only complication of which the author is aware is post biopsy bleeding. An attending physician related "much bleeding" with one patient, although no transfusion was given. However, another patient bled enough to receive blood transfusion. This particular patient has easy bleeding. Once, after being pecked on the leg by a rooster, she bled enough to require several units of blood.

In our experience, iron stain on a decalcified needle biopsy specimen was not reliable (frequent false negatives). This seems to be the conclusion of others.[6]

Although this article has emphasized the usefulness of the biopsy, the marrow study should ideally include smears of marrow aspirate, histologic section of marrow ("clot prep"), and biopsy. The three complement one another.

SUMMARY

The Jamshidi needle was used to obtain marrow biopsy in 69 percent of marrow studies in a community hospital. One or more biopsies averaged 32 mm. in total length per case. In a majority of the studies, the biopsy was useful for: (1) better assessment of cellularity, (2) excluding focal lesions or (3) exceeding the value obtained from the aspirate smears. The latter situation was usually due to "dry taps," excessive dilution of aspirate by peripheral blood or simple absence of diagnostic findings in the smear that were manifest in the biopsy. The Jamshidi needle was not found useful for obtaining satisfactory specimen for making smears. The biopsy specimen often gave false negative results with iron stain. A marrow study ideally should include smears, his-

tologic section of marrow clot and needle biopsy. □

Acknowledgement. I wish to express my appreciation to Mrs. Jo Ann Chaney for the preparation of this manuscript.

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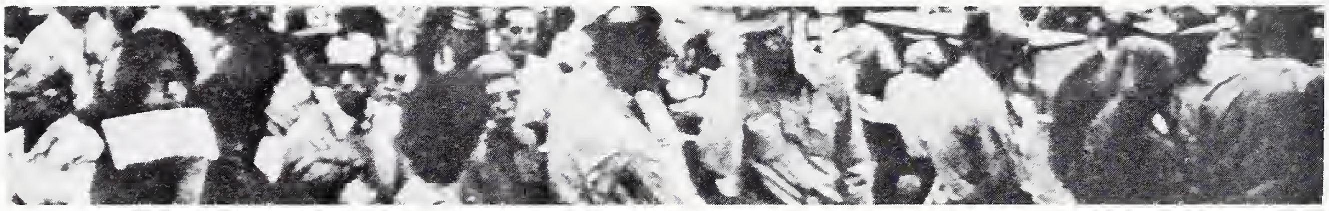

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RAPID DIAGNOSIS OF AMNIOTIC FLUID EMBOLISM*

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PAUL A. GLUCK, M.D.
RONALD G. WEAKLEY, M.D.

Amniotic fluid embolism is estimated to occur in one in 20,000 to 30,000 pregnancies, carries a mortality rate of 90 percent, and accounts for 5 to 10 percent of all maternal deaths.[1, 2, 5, 6, 7, 10, 12] Delayed recognition may contribute to the mortality rate. We illustrate a technically simple diagnostic technique: the demonstration of non-clotting blood containing particulate fetal debris by right heart sampling using a peripheral approach.

CASE REPORT

A 22-year-old was hospitalized at 44 weeks gestation, during her first pregnancy, because of latent phase labor and evidence of intrauterine fetal demise. Upon rupture of the membranes, meconium was encountered when an internal uterine pressure catheter was placed. An elevated resting baseline tonus of 20-25mm Hg was noted, and pitocin augmentation begun. Eight hours after aminiotomy, she developed fever of 102 degrees. Chorioamnionitis was suspected and therapy with penicillin and gentamicin instituted.

Twenty-five hours after amniotomy, there was four centimeters dilatation, complete effacement, and a -1 station. A paracervical block using 20cc. of 0.25% marcaine (Bupivacaine Hydrochloride) was given, splitting the dose and waiting between injections. During injection the intrauterine catheter for pressure monitoring was inadvertently dislodged and was replaced twenty minutes later with another sterile catheter. Immediately after placement, the patient became flushed, short of breath and developed generalized shaking chills. Her pulse rate was 160/min., blood pressure 60mm systolic with diastolic undetectable, and temperature was 101 degrees.

The differential diagnosis at this point included:

1. Possible earlier intravenous injection of marcaine.
2. Anaphylactoid shock reaction to marcaine.
3. Gram negative sepsis with endotoxic shock.
4. Thrombotic pulmonary embolism.
5. Amniotic fluid embolism coincident with reinsertion of the intrauterine catheter.

The intravenous fluids were increased and 0.3cc of epinephrine 1:1000 solution was given intravenously and repeated in five minutes. No clinical improvement was noted; the patient remained hypotensive, disoriented and oliguric. A left subclavian CVP-line was placed with a reading of 17cm. H_2O. Arterial blood gases obtained on face mask oxygen revealed a combined respiratory and metabolic acidosis with pH 7.31. One gram of solu-medrol was given intravenously and clindamycin was added to the regimen of penicillin and gentamicin. While no overt bleeding was present, hypofibrinogenemia, thrombocytopenia and a prolonged coagulation time were documented.

At the time of the CVP placement, its location later documented by chest X-ray, a blood specimen was drawn from the right heart and was smeared on a slide for viewing microscopically. An amazingly clear number of fetal squames (Figures 2 and 3) and lanugo hairs were noted. Furthermore, this specimen had not clotted at 20 minutes. Both of these findings were consistent with a diagnosis of anmiotic fluid embolism.

An intravenous injection of heparin 10,000 units was given to prevent further defibrination and the patient underwent rapid cesarean section to remove the source of amniotic fluid and the intrauterine contents. A 9 lb. 8 oz. still-born infant was delivered without serious bleeding problems. A second dose of heparin was given postoperatively. Thereafter, heparin was withheld because of persistent uterine bleeding. Fresh whole blood was used to replace clotting factors. Postoperative care was subsequently handled by an intensive care unit team. On the third hospital day, she was extubated. On the tenth postoperative day, she was discharged from the hospital in good condition.

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DISCUSSION

The post mortem diagnosis of amniotic fluid embolism by right heart blood samples was first reported in 1947.[1] However, the procedure has never gained popularity possibly because of "reluctance to perform intracardiac aspiration on such critically ill patients."[12]

Our experience documents the usefulness of sampling blood through an ordinary central venous pressure (CVP) line, threaded into the right heart from a peripheral vein. CVP monitoring for patients in shock is well-established. With the CVP line in place, right heart blood is available for study without further trauma to the patient. Although there are obvious alternative routes for sampling (Figure 1), insertion of a CVP line in this manner is the least hazardous. Marked fluctuation of the manometer column corresponding to ventricular systole indicates that the catheter is in the right ventricle, which can then be confirmed by routine chest x-ray.

Blood drawn from the right heart then examined microscopically with only scanning power even without special stains demonstrates emboli of fetal epithelial squames. Other authors stress the importance of centrifuging the blood and examining only the top layer above the buffy coat of white cells. We feel that simple microscopic exam of the whole blood specimen suffices. It is suggested that polarized light will aide in detecting fetal hair by enhancing its doubly refractile characteristics. Mucicarmine stain may also be useful in demonstrating mucin in meconium that originates from fetal bowel fat.

The combined findings of fetal debris with non-clotting blood gives further credence to the diagnosis of amniotic fluid embolism.

Thrombotic pulmonary emboli from the legs may produce a similar clinical picture, but the absence of a history or signs of venous thrombosis and the presence of defibrination and coagulopathy indirectly support the diagnosis of amniotic fluid embolism.[4]

Doubts concerning the reliability of this procedure are twofold. First one must be careful not to introduce hair and epithelial cells from the patient's own skin. This can be overcome by flushing the catheter and serial sampling. Secondly there exists some question that the presence of amniotic fluid in the maternal circulation may be physiologic and may exist in some degrees in all normal gravidas in labor. Liban and Sharir published a controlled study of maternal deaths comparing post mortem findings. Amniotic fluid was not found in the lungs of the group of maternal deaths due to other causes. They concluded that the finding of amniotic fluid in the lungs is not a physiologic event and that its presence is pathologic.[2] In the same publication a reference is made to the work of Sparr and Pritchard who injected radioactive tagged red cells into the amniotic sacs of 25 women prior to labor and found no radioactivity in the maternal circulation after delivery.[2, 3] Unlike the finding of chorionic villi in the lungs of parturient, amniotic fluid represents a true pathologic process.[2, 15] Furthermore, the clinical syndrome of shock and death and the autopsy findings have been reproduced in laboratory animals by intravenous infusion of unfiltered amniotic fluid.[13, 14] □

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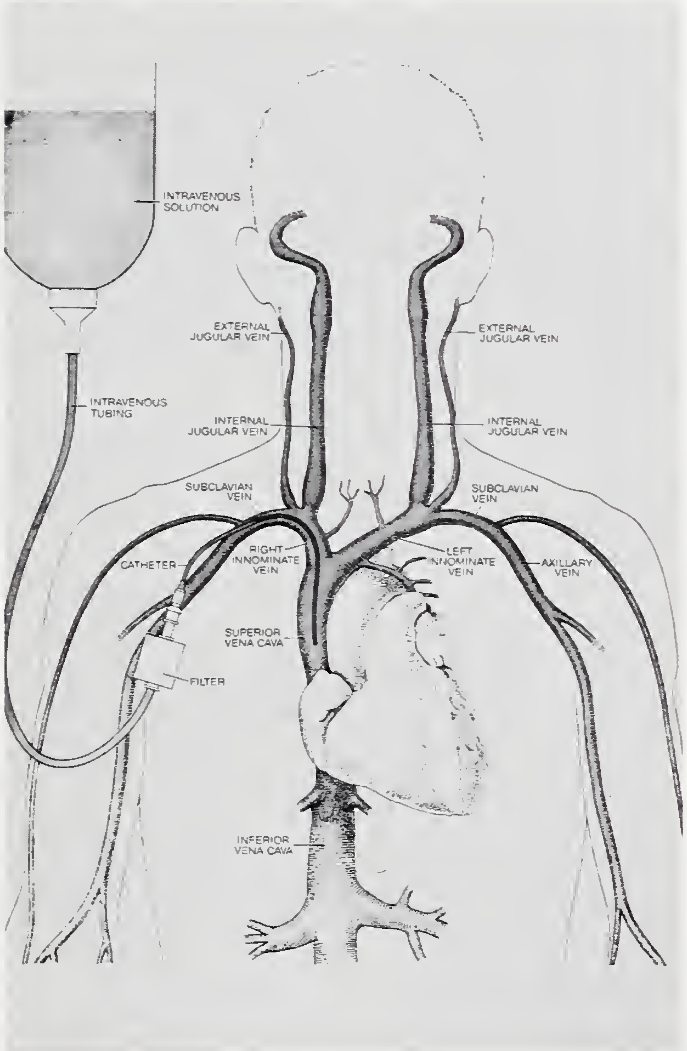

Figure 1. Circulatory anatomy demonstrating routes for right heart sampling. (Reproduced, with permission, from Dudrick and Rhoads, "Total Intravenous Feeding" *Scientific American* 226:74, 1972).

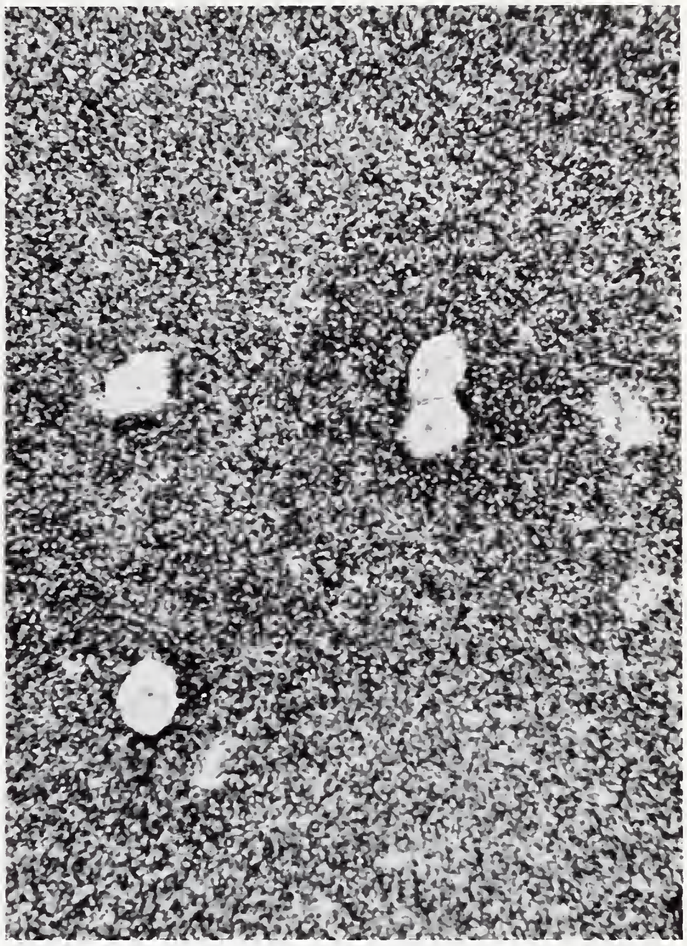

Figure 2. Maternal right heart blood sample unstrained demonstrating fetal squames under 10X scanning power.

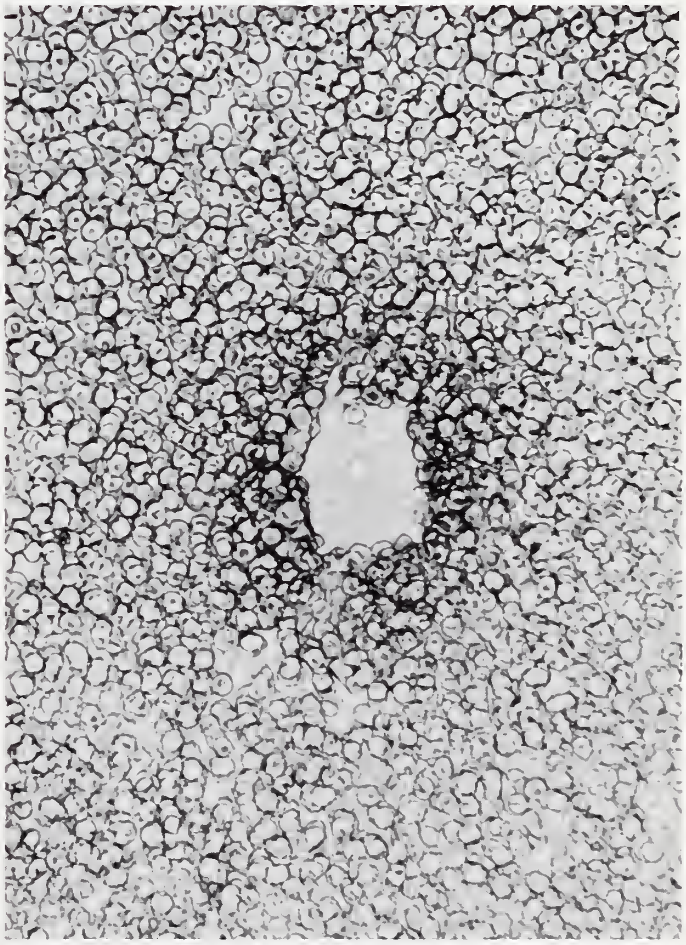

Figure 3. Same slide viewed under 25X high power.

A GROUP EXPERIENCE FOR PARENTS OF CHILDREN WITH MALIGNANCY*

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Since Pratt's first work using group therapy in a tuberculosis sanitorium, group therapy has been used for psychiatric patients, alcoholics, parents of battered children, obese individuals, families of dialysis patients, and parents of leukemic children. The purpose of this paper is to briefly review this subject and to present the author's observations on a parent group at the Medical University of South Carolina.

One study, reporting on a time limited parent group, found that parents derived more benefit from the group when the initial shock of learning the diagnosis had passed and a remission had occurred.[3] The parents went through Kubler-Ross' five stages of mourning — in anticipation of their child's demise — denial, anger, bargaining, depression and acceptance.[4] Areas of discussion included disciplinary problems, school problems, sibling problems, religion and marital communication. A special session was scheduled with a hematologist to discuss the medical aspects of the disease.[3]

The other group approach to parents of children with malignancies included holding weekly group meetings with parents of leukemic children. These groups met for 1½ hours prior to the hematology clinic. Areas of discussion were patient's difficulties in adjusting to the disease, both social and medical, parents' difficulties in accepting the illness and in dealing with their child, death, school problems, husband-wife relationship problems, problems with siblings, friends and the doctors. The group served as a forum for sharing problems, feelings, and for learning more about the medical and treatment aspects of leukemia.[2]

FORMATION OF THE GROUP

At the Medical University of South Carolina, a referral center, the pediatric hematologist-oncologist is the primary physician of children with leukemia and children who require radiation and chemotherapy after surgery for solid malignant tumors. The pediatric hematologist-oncologists expressed a need for psychological support for the parents of both of these groups of patients.

The group leaders were two psychiatrists, a pediatric social worker, and a pediatric hematologist-oncologist. It was very important to have the hematologist-oncologist at the meeting, in that parents frequently ask specific questions about their child's disease and treatment.[2, 3]

The group was held the same morning as the weekly pediatric hematology-oncology clinic, enabling outpatient parents to attend the group, as well as parents of inpatients. Prior to and during early sessions of the group announcements were mailed to parents. The morning of the group the social worker reviewed hospital admissions and notified parents of the time and location of the group.

OBSERVATIONS

Of the 23 families involved, approximately half fell into the lower socio-economic category, half in the middle range, and one in the higher bracket. The parents had 7 children with acute leukemia, while the remaining were parents of children with solid tumors, including brain tumors.

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The population of the group was mainly mothers while fathers attended sporadically. Attendance was highest when the sick child was hospitalized.

The high motivation of the group was demonstrated by the fact that one mother and a friend drove 200 miles to attend two sessions. Her child was one year post surgery and was having no difficulties. The mothers that came consistently participated most actively. They encouraged the more reticent group members to talk and provided support to new members.

The following were areas of discussion in the group:

1. Parents had difficulties knowing how to discuss the illness with their child. The age of the child and level of maturity was always a consideration in discussing the illness. After struggling with this issue for several weeks, one mother subsequently began to discuss her son's disease openly with him. This resulted in improved mood of both the mother and the child.
2. Death was mentioned indirectly, in ways such as "I won't let her do anything because I'm afraid something will happen." The parents soon realized, with guidance from the therapists, that these indirect references were a means of talking about death.
3. Frequently the sick child learned that his parents became increasingly indulgent toward him and attempted to gain extra favors.
4. Discipline problems were a frequent area of discussion. Some parents were unable to adequately discipline their sick child while others made a conscious effort to treat the sick child as normally as possible.
5. Family difficulties were discussed. Disagreement between spouses over ways of caring for the child was common. The sick child's illness visibly emphasized preexisting marital conflicts. Discussion of family problems would occasionally center on the extra financial burden caused by the child's illness. In two families the fathers' work situations deteriorated during the child's illness. In one case, the father resigned from his job two months after his child's malignancy was diagnosed. The extra demands on the mother frustrated the husband's dependent needs. His wife carried the burden of the family finances and caring for the daughter.
6. Siblings would manifest resentment and jealousy of the sick child because of necessarily increased attention afforded him.
7. Many parents expressed anger and guilt over their child's illness. The query "what have I done to deserve this?" was heard. There was also a magical quality in some parents' feeling that overprotection of the sick child would prolong his life. When their child became depressed, the guilt would increase and some parents discussed having difficulty handling their child's depression, as well as their own.
8. Occasionally parents talked of getting another child to replace their sick child after death.[5] The "replacement child" has an extra burden, in that, the parents unconsciously expect him to behave as the lost child. When this subject arose active discussion ensued between parents with other children and those who were thinking of replacing their sick one.
9. There was discussion of the hospitalization and treatment. Some expressed resentment that an earlier diagnosis was not made. Others stated that they had the feeling there was no single doctor in charge of their child's case. They resented lack of continuity of medical care for their child. They complained about the treatment procedures, such as injections, radiation, and the resultant alopecia, malaise, nausea and vomiting. There were frequent questions about disease process. These questions had been answered many times before. The answers were difficult for parents to hear due to their denial of the gravity of their child's illness.[1] In contrast, others praised the staff and the care they received, even while discussing fear of recurrence and relapse.
10. Apprehension over leaving the hospital and taking on the care of a sick child was expressed by several mothers.
11. Religion appeared to provide solace for

some families. One father became almost fanatical in his effort to persuade other parents that strong religious convictions would bring them total peace and comfort.

DISCUSSION

Our group for parents of children with malignancy is similar to other such groups in that the subjects of group discussion are similar. Others had a constant group population,[2, 3] whereas our group's membership fluctuated. The major factor that contributed to attendance at the group appeared to be hospitalization. Parents who had children in the hospital came to the group regularly and appeared to gain both emotional comfort and increased knowledge of the disease and treatment process. Once the child was discharged few parents returned unless a crisis occurred. The crisis did not always have to be related to the child's illness for a group member to come back. The group became a sounding board for other problems as well.

Our experience revealed that a group experience is very helpful to parents of children with malignancy. This approach would be of benefit to families of children or adults with other acute or chronic disease processes.

SUMMARY

In summary, a group was formed to give emotional support to the children with varying forms of malignancy. Our approach departs from the literature[2, 3] in that other such groups have been formed for the parents of leukemic children only.

Our group provided an opportunity for parents to express emotions, to learn how to handle their child's emotions, to understand the disease process, to share the misery of having a chronically ill child, to share their concerns about losing the child, and to identify with each other. □

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Editorials

THE MALPRACTICE SITUATION IN CHARLESTON

The following article is excerpted from a program given by the Charleston Auxiliary before a joint meeting of the County Medical Society and Auxiliary. It is in essence a report to both groups of the results of the Auxiliary speeches to community clubs on the topic, "Is There a Malpractice Crisis?" The Medical Society Executive Board felt that the effort itself and the feedback from the speeches should be made known to the societies and auxiliaries in the state.

Malpractice became a public issue as a result of articles on the subject in the Charleston *News and Courier* which were very critical of the medical profession. The first lead story talked about "greedy" doctors. The Charleston Medical Society attempted to obtain space in the newspaper to rebut this article, and the result was a very chopped-up article which made very little sense. We were told that this was all that would be published. In desperation, the Medical Society and Auxiliary decided to form a Speakers' Bureau to talk to people in the community about what the malpractice crisis was really all about — because we could not reach them otherwise. With the approval of the Executive Committees and the membership of both the Medical Society and the Auxiliary, a Speakers' Bureau was formed. We researched malpractice, wrote letters, and sent them to the civic clubs in the community. Since July, we have talked with over 30 clubs and groups. We have reached about 2,000 interested, civic-minded, and well-educated people in the community.

We first gave some personal information, something about ourselves, explaining why we were speaking. We told them how and where we had gotten the knowledge that we had. We stressed that our concern was for the practice of medicine, the people who live in South Carolina and the relationship between the two. We gave some definitions of terms so that we would be on a common speaking basis. We wanted them to know exactly what we were saying when we talked about medical malpractice, bad results, liability insurance, consumer price index and other terms that we used. We discussed what is now happening in South Carolina, a comparison of the cost of medical care at the end of 1976 with the cost of many other important items at that time. We were pointing out that the practice of medicine should not be the scapegoat for national problems that concern us all. We then told our audience what we knew about the rise in cost of malpractice insurance without pointing any blaming fingers at any one cause of this increase. We discussed problems such as informed consent forms, contingency fee basis for lawyer payments, settling out of court, record-keeping, paper work, filling out forms and various other things.

And finally, we asked the question, "Are there solutions to the problem that we have and what can we do to bring those solutions about?" We discussed some of the solutions that have already been offered such as grievance committees, peer review, voluntary binding arbitration contracts, statute of limitations, limiting the dollar value awards, professional codes and so forth.

We told them that if we do not find the solutions to our problems, the federal government will find those solutions for us. We think having the people informed about the issues and talking together might help us find our own solutions. And we did get response.

Those of us who did speak felt that we were able to correct erroneous impressions. Specifically, we feel that these points were clarified: (1) the malpractice crisis is not a result of increased medical negligence; (2) bad results and malpractice are not equivalent; (3) the malpractice crisis has resulted in increased direct and indirect costs to everyone concerned; (4) remedies do exist through legislation and increased understanding on the part of the patient and the physician.

The talks were very effective from a public relations standpoint, and we ourselves learned quite a bit from the question and answer sessions. A recent national survey showed that 61% of Americans feel that there is a "crisis in health care" related to costs and lack of interest and sympathy on the part of the physician. Although we have no percentages for Charleston, the question periods after our talks revealed quite a bit of hostility towards the doctors and very little knowledge of the business aspects of the practice of medicine. We were speaking to middle class, well-educated citizens. Most were in an age group inclined by upbringing to be very courteous to women.

Despite this, they are truly disturbed about costs, doctor affluence and doctor indifference. They questioned long waiting periods and abrasive or unsympathetic office personnel. They generally understood that medical emergencies arise and that people with acute problems sometimes need more time than that designated on the appointment book. But they resent consistently long waits, receptionists who could care less, finally getting to be seen by the doctor, and then the feeling that they are being rushed — right out the door to the payment window.

Those of us involved in medicine contributed to this hostility. People understand the "pay now" policy when explained to them in terms of office and billing costs and their own propensity to pay the doctor bill last. They understand increased fees when explained in terms of 1967 dollars, the inflation rate of the economy, the fact that the long working hours of the physician makes his income relatively high, and the amount of training involved in becoming a physician. They also need to be told the business facts — increased rents, utilities, minimum wages and so on. But they have to be told these things before they understand them.

We wondered why so much attention has been focused on the medical profession. The groups we spoke to did agree that attitudes of society in general have changed a great deal since, say the 1930's. However, they still want personal attention from their physicians. The attitude of truly caring can be communicated to them without spending reams more of your time. People care more about their bodies than they do their washing machines, TV sets, or even their lawsuits, which is why they are more hostile towards their physicians when dissatisfied. They want to know that you care — and if you don't care, they don't care what happens to you. That is the strongest message they tried to get across to us. They also expressed concern about the ability of medicine to discipline itself and to do something about the "bad apples."

Private medicine is in a difficult position today. We did learn that patient hostility *does* dissipate with explanation and sincerity. You *can* fight socialized medicine. By attempting to communicate better with the public as with these talks we may be able to accomplish something. Those we spoke to said afterwards, "you ought to be doing more of this sort of thing. Doctors need to be involved more in politics and in community activities." Those clubs which had doctor members were much more sympathetic toward medicine in general than those which did not.

It appears that the malpractice crisis is calming down, in South Carolina and across the country. This does not mean that we can forget about it. Protective legislation is necessary or we can have a flare-up anytime. South Carolina has less protective legislation than almost any other state. Despite appearances, our statute of limitations for all practical purposes is six years. The JUA will soon expire and the legislature is now toying with the idea of what to do next. In terms of defending medicine, all of us need to put aside our differences on other topics, as those of us who did the speaking did, and work together through our medical organizations for legislation. Those of you who have legislators and their families for patients need to talk to them, and we all need to keep ourselves better informed.

Attempting to foster better patient-doctor relationships, improving public relations in general, and pressing for legislation favorable to the medical profession are three areas that we can no longer afford to ignore.

Margaret C. (Skippy) Adkins (Mrs. W. Y.)
Mary Ivester (Mrs. J. R.)
and Tilly Moseley (Mrs. Vince)
for the Charleston County Medical Society
and its Auxiliary

NUTRITIONAL ENRICHMENT OF THE MEDICAL SCHOOL CURRICULUM

The importance of nutrition for achievement of health is well-recognized, and the incidence of malnutrition is a universal problem, even in the presence of an abundance of food as in affluent nations. Within South Carolina, the nutritional deficiencies have been publicized in a book by United States Senator Ernest F. Hollings.[1] As a sequel to the review and approval of a proposed academic program for a new degree in nutrition (MNS) at South Carolina State College, the health affairs staff of the South Carolina Commission on Higher Education took the initiative recently in the organization of a Statewide Conference on "Infusion of an Awareness of Nutrition into Medical and Health Science Curricula."[2] At this Conference Dr. Lamar Priester, then Acting Director of the Department of Health and Environmental Control, remarked that ". . . . ignorance, poor food habits, mismanagement of resources, poor sanitation, and environmental hazards such as lead poisoning among children. . . ." may be associated to a large extent with nutritional deficiency.

Although we look for fundamental progress in the betterment of nutrition through education,[3] especially in our school system, the training of future physicians to make use of advances in modern nutrition is also an important objective that can lead to more rapid recovery of the surgical patient[4] with less time spent in the hospital. Such training may also provide the rational basis for intervention in food habits as a therapeutic measure.

With the opening of a new school of medicine at the University of South Carolina in Columbia, the opportunity exists to include nutrition in the curriculum from the outset. Changes in the curriculum of long-established schools are usually difficult to achieve. For such reasons, the Statewide Conference on the infusion of nutrition into the medical school curriculum seemed timely and appropriate, as the first of a series of conferences to be initiated by the Commission on Higher Education, in cooperation with the South Carolina Nutrition Council and other agencies, in an effort to achieve betterment of nutrition through educational programs for physicians and other health professionals, for teachers at all levels, and in the training of professional nutritionists.

The objective of curricular change is not to cram the mind with nutritional facts, but to create an awareness about nutrition and its significance and to reveal opportunities for the physician to obtain professional assistance from nutritional specialists such as dietitians. The perspective of the patient has been revealed in a recent article by a well-known personality, Norman Cousins,[5] published first in *The New England Journal of Medicine*, reprinted in the *Saturday Review*, and finally abstracted in the *Readers' Digest:*

> "Perhaps the hospital's most serious failure was in the area of nutrition. It was not just that the meals were poorly balanced; what seemed inexcusable to me was the profusion of processed foods, some of which contained preservatives or harmful dyes. White bread, with its chemical softeners and bleached flour, was offered with every meal. Vegetables were often overcooked and thus deprived of much of their nutritional value. No wonder the 1969 White House Conference on Food, Nutrition, and Health made the melancholy observation that the great failure of medical schools is that they pay so little attention to the science of nutrition."

Why should the physician be unduly concerned about nutrition? As individual members of society, physicians and their families are also vulnerable to the two major precursors of disease:[6] (1) perturbations of the external environment including carcinogenic, mutagenic, and toxic pollution of air, food, and water; and (2) self-induced insults on the internal environment related to insufficient self-discipline, immoderate social behavior, and inadequate personal responsibility for self-care. Through better understanding of the principles of nutrition and by personal demonstration through exemplary self restraint and a positive approach to health maintenance and prevention of disease, physicians can help themselves, their families and friends, and their patients.

Medicine has been focused traditionally on the cure of disease, and the relevance of including a course in nutrition in the medical school curriculum has not received high priority. The proponents of including nutrition have been unsuccessful in the competition on the Curriculum Committee for instructional time on the overcrowded class schedule. Practical obstacles result from the fact that much curricular content is directed at enhancing achievement on board scores, and that board examinations reflect to some extent the specialty areas of post-graduate medicine. Nutrition is not a specialty area and therefore lacks the visibility, prestige, and power associated with specialty boards and residencies.

The American Medical Association has recognized the need for improvements in the teaching of nutrition in medical schools, and its Council on Foods and Nutrition convened a conference on "Nutrition Teaching in Medical School" in 1962. At that time, a series of specific recommendations were made. A follow-up conference was held by the same group ten years later, and the startling discovery and very disappointing conclusion was made that few if any improvements had been accomplished by the medical schools. Since 1972, some but not much progress has taken place.

Conference participants were informed of a recent successful attempt at the School of Medicine, University of North Carolina at Chapel Hill. A discrete concentrated mini-course called "An Introduction to Nutrition in Medicine" is in place as a required component of the curriculum for second year students. The separate course obviates the problem that most students do not identify the nutritionally relevant content of their courses in biochemistry, physiology, and pharmacology as "nutrition." The course at Chapel Hill is coordinated by a nutritional biochemist, Dr. Carl E. Anderson, and is taught off-campus in an environment conducive to scholarly reflection, discussion, and informal communication. A major factor in success of this course, according to the originator, is the focus on motivation of the student through emphasis of the value of nutrition as a *supporting base*[7] for the treatment of disease encountered in the practice of medicine. In this way, the potential of a sound nutritional approach as a tool for the physician becomes apparent, and the obvious relevance serves to generate interest, enthusiasm, and learning.

What actions could be taken in South Carolina to improve the preparation of future physicians? Several promising suggestions emerged from the Conference:

(1) Require a college-level course in nutrition as a prerequisite for admission to medical school.

(2) Emphasize the importance of *nutrition* for the *support of medical practice,* since the interest of the medical student is first stirred by the presentation of the patient's disease. The supportive value of nutrition consists of shortening convalescence, extending the time for therapy, and increasing the capability of the patient for recovery. If the student can perceive nutrition as a factor that he can use in treatment of his patients, the teaching of nutrition in the medical curriculum can succeed.

(3) Make use of clinical case conferences and involve the students personally in deciding what the patient's menu should be and how to achieve this under the supervision of the dietitian and the clinical specialist.

(4) Teach nutrition in an off-campus site and an informal environment conducive to the initiation of changes in the curriculum.

(5) Teach nutrition as a separate course with a sharp focus, in order to obviate the possibility that students may not recognize that nutrition has been incorporated into existing courses in the basic and clinical sciences.

(6) Do not attempt to convert a physician into a qualified nutritionist through changes in the medical curriculum, but try to engender an appreciation or awareness about nutrition and to foster confidence in the nutritionist as an important resource for consultation.

(7) Encourage all physicians who counsel patients to know as much as possible about obesity and food fads, and the effect of food faddism on such parameters as the hemoglobin level in the blood.

(8) Provide instruction in the abnormalities

of the eye related to Vitamin A and D deficiencies, the endemic problems with cataracts in various parts of the world, the incidence of glaucoma that relates to the role of zinc in the carbonic anhydrous mechanism, and diabetic retinopathy as a manifestation of metabolic dysfunction of great concern to the ophthalmologist.

(9) Encourage the nurse, who is present in the acute care setting 24 hours a day, to assume an instrumental role in the implementation of the prescription for specific foods for the patient, and in providing instruction in nutrition.

(10) Provide opportunity for the physician assistant, dental assistant, dental hygienist, occupational therapist, respiratory therapist, physical therapist and others to participate in educating a patient to practice good nutrition and acquire an understanding of nutritional problems as related to his or her illness.

(11) Recruit a professional nutritionist for service on the hospital staff along with other specialists.

(12) Establish internships in nutrition at academic health centers to provide opportunities for clinical studies for doctoral students in nutritional biochemistry, thus contributing to the need for nutritional experts in the clinical sciences.

(13) Nutritionists must find ways to work with food industries for the achievement of good health since people will probably eat one of every two meals away from home within the next decade.

(14) Publish a newsletter in order to translate research findings reported in the professional nutritional literature into a format that is accessible and clear to non-nutritionists.

(15) Make greater and more effective use of the South Carolina Nutrition Council as the statewide coordinating and advisory committee formed for the purpose of assisting the various groups and agencies in the State that are interested in nutrition.

(16) Find more ways to use the component of land-grant educational institutions known as the Extension Service with its network of County Nutrition Councils for the promulgation of nutritional counseling and education at the grass-roots level throughout the State.

(17) Use the Area Health Education Centers more effectively for the delivery of continuing education in nutritional concepts for support of medical practice.

We hope that focusing the attention of practicing physicians, as well as medical educators, on the value to be derived from enrichment of the curriculum in nutritional content, may contribute to improvements in health in South Carolina.

George P. Fulton, Ph.D.
Assistant Director for Health Affairs
S. C. Commission on Higher Education
Columbia, South Carolina

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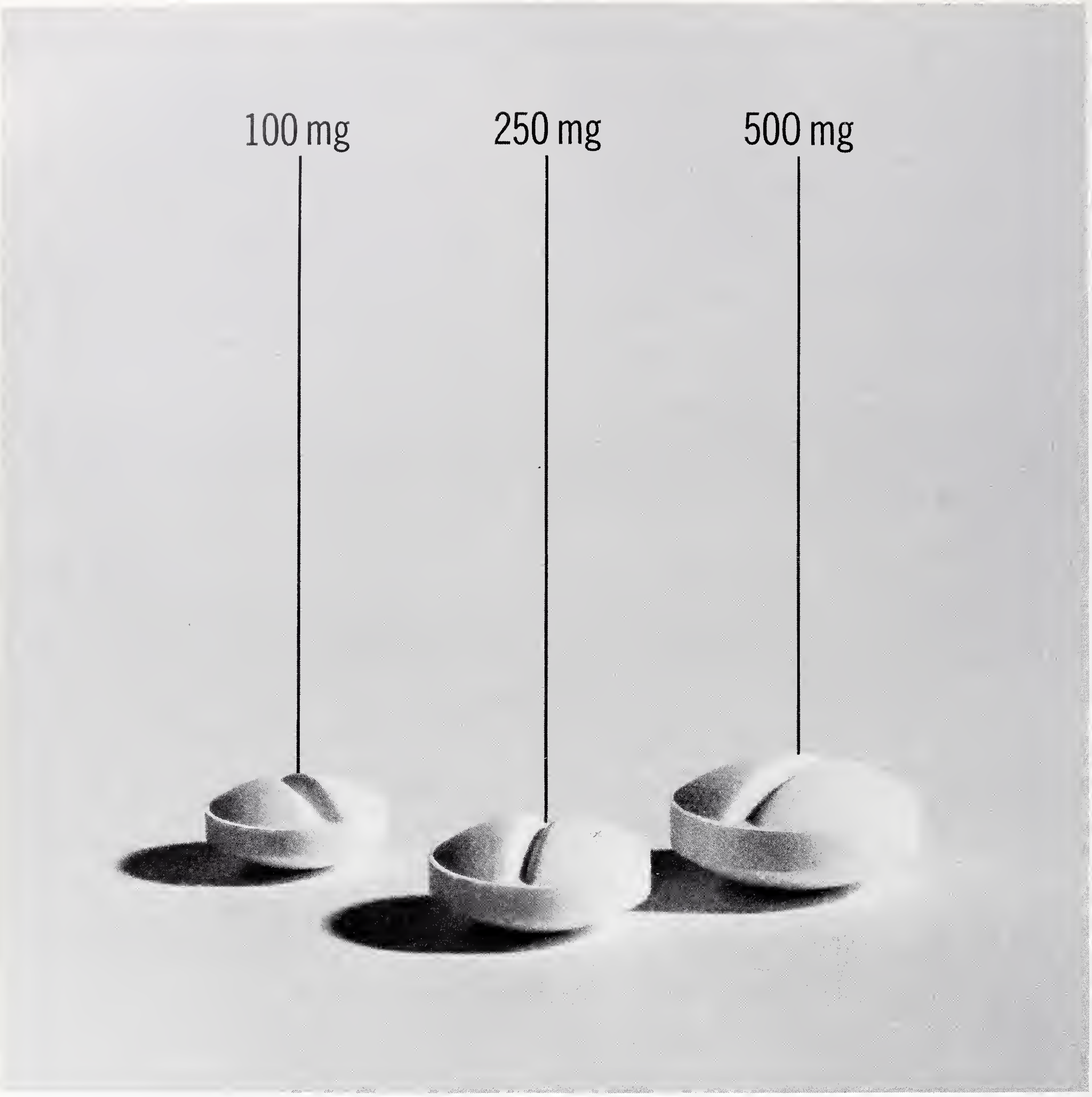

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President's Page

OFF TO A GOOD START

The Annual Meeting of the SCMA has come and gone. The House of Delegates debated, deliberated, and came to some important decisions. This page will reflect my opinion and comment on two of these actions. As I see it:

1. Endorsement in concept of the Alexander and Alexander/CNA Proposal for Professional Liability Insurance Coverage was the single most important action taken at Myrtle Beach. This proposal will give South Carolina physicians the option of an *occurrence* policy at a time when the St. Paul's Insurance Company is again entering the South Carolina market with a *claims made* policy, which most physicians agree has definite drawbacks and disadvantages, even though the premium may be lower.

   In recommending acceptance of the CNA Proposal, your Council and the House recognized that the SCMA would have important continuing input and involvement in the program through the peer review of *prospective* applicants for insurance, that it would receive detailed reports from CNA of all claims activity, and that it would be able to monitor and assure at all stages that the rate structure is based on South Carolina, rather than national or regional experience. Furthermore, it will protect South Carolina physicians from the hazard of having available *only* a claims made policy (as offered by St. Paul's), in case the JUA should decide to close operations at a time in the future. As this is written, the Executive Committee is working to finalize agreements with CNA which we hope will be of the greatest possible benefit to South Carolina physicians.

2. Reversing the Reference Committee's recommendation, the House voted to endorse a Charleston County Resolution expressing "absolute opposition to H.R. 1818 and S. 218, and to all other bills in Congress which will tend to nationalize medicine and the health insurance industry." This reaffirmed the position taken by the House at the Winter Meeting last November. This stand may be regarded as reactionary, even neolithic by some in the press and even by some physicians, despite the fact that excellent reasons for this position were outlined at Myrtle Beach.

   On May 5, President Carter denounced the AMA as "the major obstacle to progress in our country to having a better health care system in years gone by." The past record of the AMA in cooperating in government-sponsored health programs (Medicare, Medicaid, PSRO, etc.) and trying to make them work even though they may be ill-conceived or poorly administered, and current sponsorship of NHI legislation, have earned the AMA no "brownie points" in Carter's eyes. A determined attempt to discredit organized medicine and even individual doctors, in order to generate a public "demand" for National Health Insurance appears to be in progress. In my opinion, a well-reasoned, well-documented, but nevertheless firm and unequivocal stand *against* further encroachment by government in medical affairs, such as is made in the Charleston Resolution, is the proper stance of organized medicine in facing this major threat.

In these two and many other matters, the SCMA made a good start for the year at Myrtle Beach. The newly expanded Council will have had its first meeting by the time this is printed. There is much work to be done. Let's all get on with it!

John C. Hawk, Jr., M.D.
President

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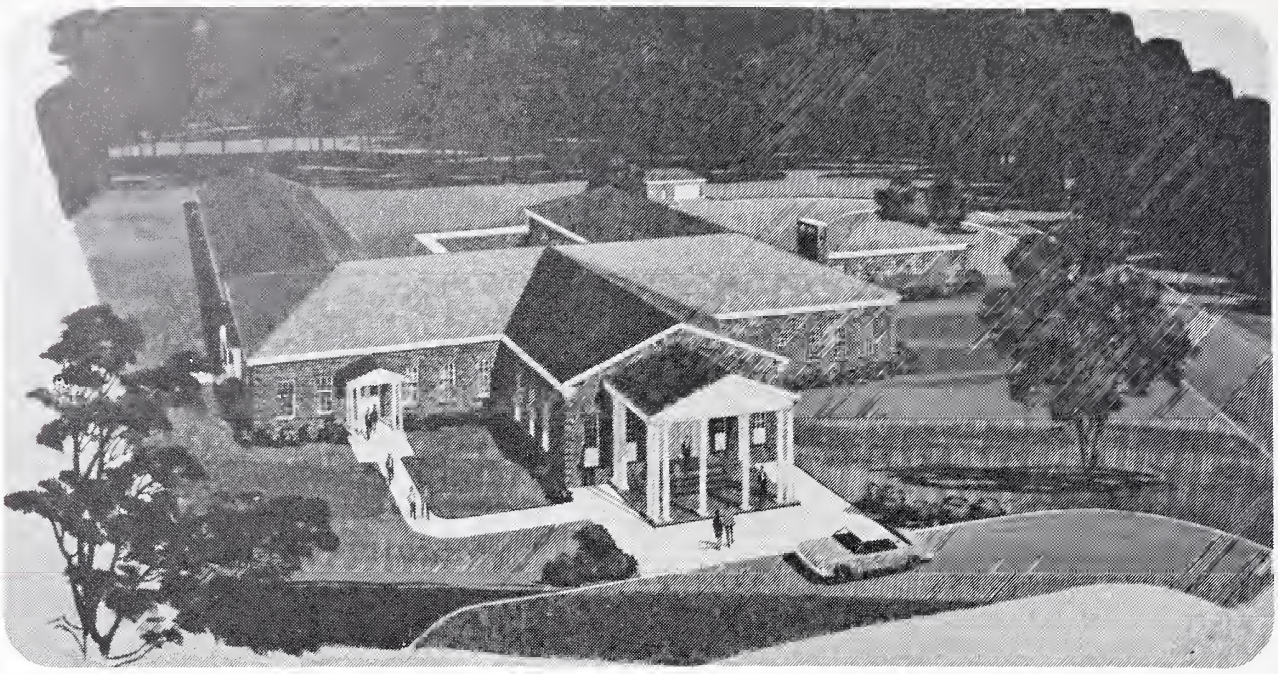

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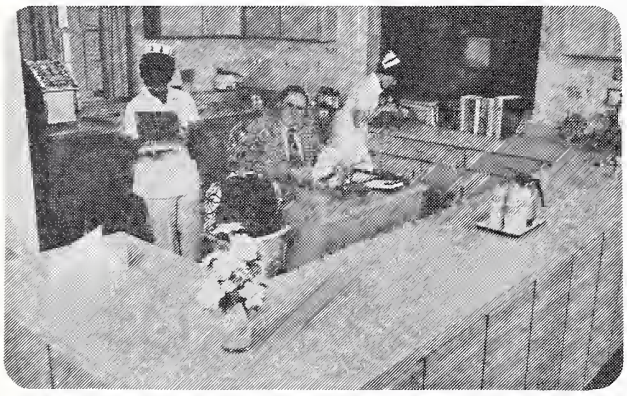

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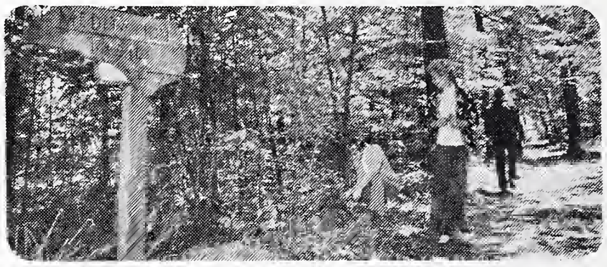

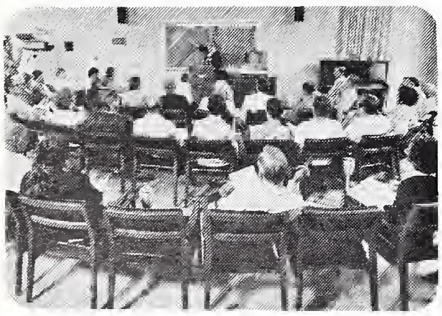

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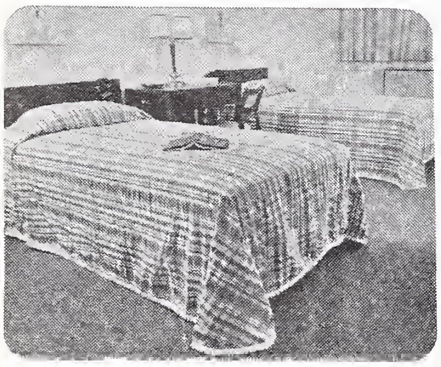

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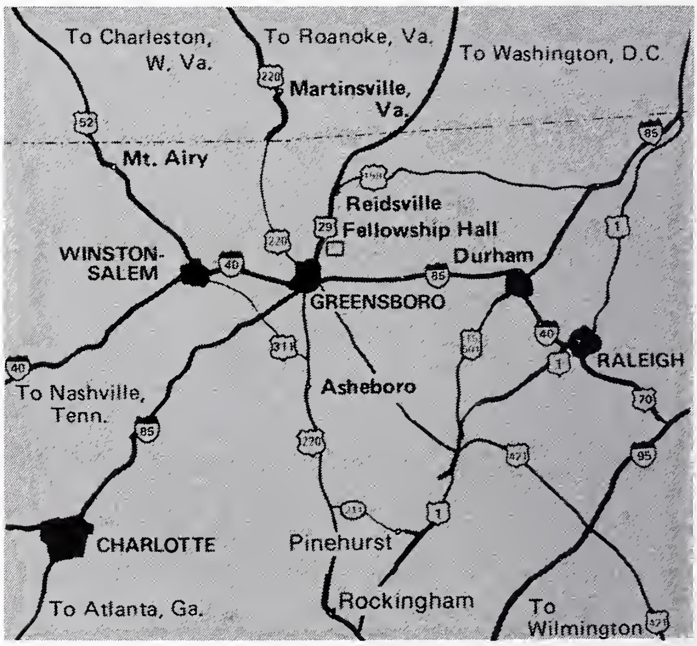

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AUXILIARY PRESIDENT'S PAGE

AUXILIANS — INFORMED — COMMITTED — INVOLVED

As we begin a new auxiliary year, we look to the future with anticipation. It is a privilege to be a member of the auxiliary to the South Carolina Medical Association.

We pledge to you our support; we pledge to you our help any way we can. We enlist your encouragement and assistance as we continue the great tradition of our organization, by adding new dimensions to Membership-Legislation-Health Projects, Child Protection, AMA-ERF and Young Physicians' spouses.

Membership:

Working together we can increase our membership by 10% — recoup lost members, organize two new auxiliaries, and enlist members-at-large in unorganized counties.

Legislation:

Keep every member informed and abreast of all pending legislation. "Legs Alert" working in every county. A contact person in unorganized counties.

Health Projects:

To continue promoting immunization of children. To begin one new state-wide health project. Every county is encouraged to develop a project which meets its particular needs; then to deposit this project in the National Project Bank.

Child Protection:

To continue working with the South Carolina Child Protection Advisory Committee in programs that will decrease neglect and abuse among children.

AMA-ERF — To increase our gifts by 10%.

Young Physicians' Spouses:

This committee will work with teaching facilities throughout South Carolina to tell the Auxiliary story and present the case for organized medicine to intern, resident and fellow spouses. Through this new dimension, we hope to recruit twenty-five members.

With twelve hundred dedicated auxilians in twenty active county organizations, we look forward to helping our spouses fulfill the purpose of the SCMA, "to extend medical knowledge and advance medical science, to elevate the standards of medical education, to secure the enactment and enforcement of just medical laws, to promote friendly intercourse among physicians' families, and to enlighten and direct public opinion in regard to the great problems of medical care, so that the profession shall become more capable and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life."

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ONE HUNDRED THIRTIETH ANNUAL MEETING OF THE SOUTH CAROLINA MEDICAL ASSOCIATION HOUSE OF DELEGATES

April, 1978

A total of 277 physicians registered at the 130th Annual Meeting of the South Carolina Medical Association House of Delegates held at the Myrtle Beach Hilton in Myrtle Beach, South Carolina, Thursday, April 27 through Sunday, April 30. One hundred eleven physicians were eligible voting delegates.

Thirty-four reports and 19 Resolutions were submitted by various committees, officers and county medical societies of the SCMA to the House for consideration add required action. New officers elected on Sunday, April 30 to serve the Association for the 1978-1979 period are:

President — John C. Hawk, Jr., MD.
President-Elect — Harrison L. Peeples, M.D.
First Vice President — C. Guy Castles, Jr., M.D.
Second Vice President — J. Sidney Fulmer, M.D.
Secretary — William H. Hunter, M.D.
Speaker of the House — J. Gavin Appleby, M.D.
Vice Speaker of the House — Hugh H. Wells, M.D.

Councilors:

First District — J. Frank Biggers, III, M.D., replacing A. Richard Johnston, M.D., whose term expired.
— Bartolo M. Barone, M.D., added as a result of approval by House of Redistricting.
Second District — Kenneth N. Owens, M.D., added as a result of approval by House of Redistricting.
Fourth District — Leonard W. Douglas, M.D., replacing J. Hal Jameson, M.D., whose term expired.
— Ted J. Roper, M.D., added as a result of approval by House of Redistricting.
Seventh District — Davis D. Moise, M.D., re-elected for additional term.

AMA Alternate Delegates:
Waitus O. Tanner, M.D., to fill unexpired term of M. Ray Gillespie, M.D., which expires 12/31/78.
Donald G. Kilgore, Jr., M.D., whose term begins 1/1/79.

AMA Delegate:
Waitus O. Tanner, M.D., to replace Harrison L. Peeples, M.D., beginning 1/1/79.

Additional Member of Council:
Vernon E. Merchant, Jr., M.D., added as a result of approval by House of Tabled Amendment to Constitution.

Actions taken by the House of Delegates were published in the *SCMA Newsletter*. A major step was taken in approval by the House of the AMA Survey Team Report which will effect re-writing of the SCMA Constitution and By-Laws to eliminate inconsistencies and antiquated language. In addition, the Survey Team Report recommended re-organization of the SCMA and its committees into a Commission-Committee structure. Procedural steps to effect these changes were also approved by the House.

Pictorial highlights of the meeting appear on the following page of this issue of the *Journal*.

John C. Hawk, Jr., M.D., being sworn in as new SMCA President by Halsted M. Stone, M.D., and Waitus O. Tanner, M.D. William H. Hunter, M.D., Speaker of the House, looks on.

Waitus O. Tanner, M.D., presenting gift to distinguished guest and member of the AMA Board of Trustees, Hoyt D. Garner, M.D.

J. Sidney Fulmer, M.D., being congratulated on his election to Second Vice President, by John C. Hawk, Jr., while Euta M. Colvin, M.D., looks on.

Waitus O. Tanner, M.D., presenting A. H. Robins' Physician of the Year Plaque to D. Strother Pope, M.D.

The House of Delegates in action on Sunday, April 30, 1978.

MEDICAL MEETINGS

The Tennessee Valley Medical Assembly announces its upcoming meeting to be held in Chattanooga, Tennessee, September 11 and 12, 1978. For further information, write: Jerome H. Abramson, Chairman, 960 East Third Street, Suite 313, Chattanooga, Tennessee 37403.

* * * *

The Annual Otolaryngologic Assembly of 1978 will be held September 17 through 22, 1978 in the Eye and Ear Infirmary of the University of Illinois Hospital. A condensed basic and clinical program for practicing otolaryngologists will be offered, under the direction of Chairman Emmanuel M. Skolnik, M.D. For information, write: Department of Otolaryngology, Illinois Eye and Ear Infirmary, 1855 West Taylor, Chicago, Illinois 60612.

* * * *

The American Society for Surgery of the Hand announces a program on "Primary Care of Hand Injuries," to be held September 28-October 1, 1978 at Sea Island, Georgia. For additional information, contact: American Society for Surgery of the Hand, 2600 S. Parker Road, #233, Aurora, Co. 80014.

* * * *

The Division of Perinatal Medicine of the Duke University Medical Center, and the North Carolina Department of Human Resources announce the Angus M. McBryde Perinatal Symposium, September 13-15, 1978 at the Duke University Medical Center in Durham, North Carolina. Interested parties should write: Angus M. McBryde Perinatal Symposium, Box 2967, D.U.M.C., Durham, North Carolina 27710.

* * * *

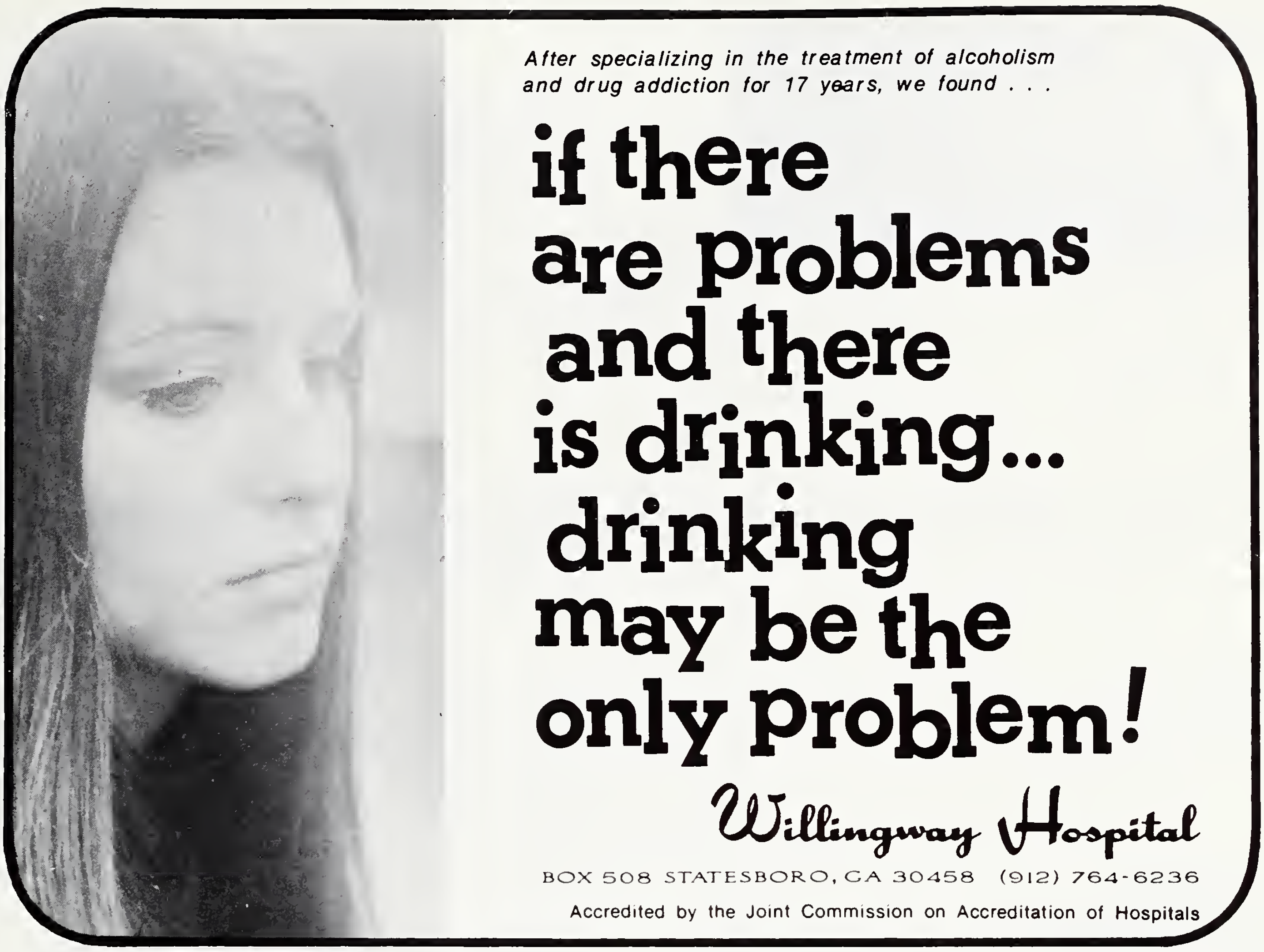
The Menninger Foundation is again sponsoring two workshops for "Physicians and Their Families" to be held in Estes Park, Colorado, June 18-23, 1978 and August 13-18, 1978. These workshops are especially designed to reacquaint the physician with family dynamics and the stages families go through in their growth. The American Academy of Family Physicians has given approval for 25 prescribed hours of continuing education credit, and the program is also accredited for 25 hours of AMA continuing medical education credits in Category I of the Physician's Recognition Award. For registration information, write: Conference Registrar, YMCA of the Rockies, Association Camp, Colorado 80511 (303 / 586-3341, Ext. 741).

* * * *

The Department of Radiology of Duke University Medical Center will present two graduate courses in diagnostic radiology. The first will be held July 31 to August 5 in Atlantic Beach, North Carolina. The second will be a five-day course to be held at the Southampton Princess Hotel in Bermuda from October 23 to 27. Both courses offer 30 credit hours in Category I of the AMA Physician's Recognition Award. For further information, write: Robert McLelland, M.D., Radiology Box 3808, Duke University Medical Center, Durham, North Carolina 27710.

* * * *

The next AMA Medical Staff Leadership Seminar will be held in New Orleans, Louisiana, at the Fairmont Hotel, September 29-30, 1978. The Seminar is designed to provide important information about hospital operations and medical staff involvement. It meets the criteria for 14 credit hours in Category I of the Physician's Recognition Award. For registration information, write to the Department of Hospitals and Health Facilities, AMA, 535 North Dearborn Street, Chicago, Illinois 60610.



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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 JULY 1978 NUMBER 7

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J. D. Gilland, Alternate
Waitus O. Tanner, Alternate

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Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Second Class Postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

INFORMATION FOR AUTHORS

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 JULY 1978 NUMBER 7

CHANGING ATTITUDES AND PROCEDURES IN THE CRIME OF RAPE*

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Evolving from the interests and efforts of a number of concerned groups and individuals, a South Carolina Committee on Sexual Assault was formed in 1975 to develop procedures and guidelines for humane treatment of rape victims and the collection of adequate evidence for conviction of assailants. This paper explores some of the prevalent attitudes about rape.

Rape by general definition involves the act of taking anything by force. From a legal standpoint it can be defined as carnal knowledge of a female by force and against her will. Historically, the rape of a country was often accompanied with the taking by force of its females. The Vietnam war was no exception. One might attempt to explain the many cases of group rape committed by American soldiers in that conflict by pointing out the dehumanizing effects of war on the participants. This explanation is not applicable to the rapidly increasing rate of rape in society today. To see this problem in its true perspective, one must examine the beliefs and attitudes toward the crime from the standpoint of the offender, the victim, and society itself. These are the same beliefs that have been held throughout recorded history. They have passed from one century into the next until they can accurately be described as rape mythology. Some of the most widely accepted myths are:

1. Rape is a crime committed by sick, sexually unfulfilled men who are victims of their own uncontrollable passions.
2. Rapes are committed by strangers on the street; if women would stay at home they would be safe.
3. Most rapes are committed by black men against white women.
4. Only women with bad reputations are raped; nice girls don't get raped.
5. Women are raped because they ask for it.
6. A woman can't be raped unless she wants to be.

A reflection of these attitudes in American society can be seen in an examination of the problems confronting the rape victim who reports the crime. Her treatment by the police when the rape is reported, in the hospital where she goes for treatment, and in the court where she seeks justice, can best be described as barbaric when it is seen in light of the truth. If one believes the myths, then it is more easily understood.

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Slowly, things are beginning to change. For the female raped initially by the rapist and then in the court, there appears to be some hope for justice in the future. Procedures in the treatment of the rape victim show a beginning recognition of the fact that she is a person in need of protection from society as well as the rapist. For this to happen it is evident that some recognition of fact and rejection of myth has taken place. An examination of the changing attitudes and changing procedures in the crime of rape should lead to a better understanding of the crime and how it might be controlled.

The belief that rape is a crime committed by sick, sexually unfulfilled men who lose control of their passions is a myth refuted by Gebbard,[7] who found in his study of sex offenders, that most men who are convicted of rape are normal in their sexual desires. He describes them as men who are criminally inclined who take what they want regardless of what it is, women included. He admits that the pathological rapist exists, but contends that the number in this category is small. McCalden[10] adds to the description. He sees them as sociopathic personalities who show chronic antisocial behavior, with many of them showing hostile and sadistic attitudes toward women.

Cohen, Garofalo, Baucher and Seghorn[4] studied rapists who were under treatment at a center for the sexually dangerous. They describe four clinical classifications of motives for rape. The first is the aggressive rape in which anger toward a significant female is displaced. Stress triggers a reaction and he selects another female, a stranger, and vents his aggression and anger on her. The second is the rape with the sexual aim. The rapist has homosexual tendencies which he attempts to deny by the rape of a female. The sexual aim is to prove his masculinity. The third is the sex-aggression diffusion rape. The rapist can achieve sexual arousal only through cruelty and aggression. It is in this type of rape that the victim is most likely to be brutally slain, because the sexual aggression of the rapist is combined with a deepseated hatred toward women. This is a rare type and would fall in the sick rapist category. The fourth type is the impulse rape. This rape is not planned but incidental to another crime, such as burglary. The criminal sees an opportunity to exploit more and seizes it.

Clinicians who treat sex offenders with mental and emotional problems estimate that from one to no more than 5% of rapists could be considered psychotic. McDonald,[11] in his study of offenders and their victims, stated that he shares this clinical impression with Gebbard.

McCaldon[10] confirms the criminality aspect of the rapist in his study of convicted rapists in Colorado State Penitentiary. He found that 85% of them had previous arrest records, and 12% had previous convictions for forcible rape. Amir[1] in a two year study of 1,292 offenders in Philadelphia, found that 49% of them had previous arrest records. His subjects were in an age of range of from 10 to 60 years, and statistics differed according to age. In the 35 to 39 year old group, almost 84% of them had prior records, and over 12% of the previous crimes of the entire group were sex offenses. His findings also deny the idea that rape is a crime of passion, since 71% of the rapes in his study were planned.

With the majority of the rapes planned, one would have to conclude that the rapist is not a man who was suddenly overcome by passion; he is what his records indicate, a criminal who has fallen victim to other myths, which define the female as property of the male. He looks on her as such and treats her accordingly.

Almost everyone knows that rapes are committed by strangers on the street, and that if women stayed at home they would be safe. Is it true? The facts are that in the United States in over half the rapes, the offender was either acquainted with or had some general knowledge of the victim, and more rapes took place in homes or apartments than any other place. Amir's study in Philadelphia and McDonald's study in Denver gave statistics on the locations of the crimes and the victim-offender relationships. In Philadelphia 82% of the offenders and victims lived in the same area. About 42% of the rapes were committed by a person totally unknown to the victim. Over 19% of the rapes were committed by close neighbors, and over 14% by acquaintances. Others in order of frequency were committed by strangers who had some knowledge of the victims, close friends, boyfriends, family friends, or relatives. In the case of the last two, most of the victims were much younger than the offenders. In the same study, 38% of the victims were raped in their homes, and 17% were raped in the offender's home. In Denver 33% were raped in their own homes, and 21% were raped in the offender's home. Amir points out that the female who trusts her boyfriend, or whose family has complete confidence in friends or relatives, may not be spared the experience of becoming a victim of rape forced on her by a person in a position of trust. This group made up 29% of the cases in which a primary relationship existed.

As for rape taking place on the street — it happens, but not frequently. Only 16% of the rapes in Denver and 18% of those in Philadelphia occurred outdoors, and most of these were not on the streets or in alleys. This rapist prefers to force his victim to a vacant lot or a backyard.

The myth which depicts the stranger on the street as a fiend, lurking in the shadows, waiting to attack the unknown female is partly baseless, as is the myth that if a woman stays at home she will be safe. To the female who lives alone, and sees her home as a place of safety, it seems somewhat cruel to deny this myth.

The white woman who trusts men of her own race while fearing black men, because she knows that the rapist is a black man who attacks white women, might be wise to revise that attitude. Many conflicting reports exist concerning the number of rapes committed by the black man as opposed to the white. The truth cannot be proved because all of the assumptions are based on crime statistics, which are notoriously unreliable. McDonald's Dever study would seem to support the black rapist theory when viewed from one angle. He found that in 253 offenders studied in relation to the population figures, there was over five times the expected number of blacks, four times the expected number of Spanish Americans, and 2/5 the expected number of whites. He also stated that three in five black rapists attacked white women. It would seem that the myth is confirmed until one studies his victim statistics. The black victim rate was almost four times, and the Spanish-American victim rate 3½ times that of the expected rate. At the same time the white victim rate was only ¾ the expected number.

The missing link is the ratio of Negroes to whites in Denver, which he does not give. Colorado has 32 whites to every Negro so even if Denver's rate is higher, it does not seem surprising that three in five black rapists attacked white women. The black victim rate was disproportionately high, and the white victim rate unexpectedly low. One can see that if the black male had shown no selectivity, the white victim rate would have been much lighter.

Amir's study was much more exhaustive. He included the socio-economic status of the offender and found that 90% of all offenders belong to the lower part of the occupational scale, which encompassed from skilled laborers to the unemployed. His figures on the racial relationships of offenders to victims is very clear. In the large number of cases in his study, over 76% of the rapes were committed by blacks against blacks and over 16% were committed by whites against whites. In less than 4% was the victim white and the offender black, with the same figure representing the black victim and white offender. The number of rape offenses, as well as the number of most other crimes, was much higher for the black male than the white. This is probably the reason for the "black rapist" myth, but since the number of blacks who fall in the lower part of the occupational scale is also much higher, one cannot attribute the reason to race rather than environment.

It is the black woman who would have reason to believe that most rapes are committed by black men. The black female is in more danger of being raped than the white, and if the white female is raped, the odds are in favor of the offender being white, rather than black. The myth of the black rapist seeking out the white victim is false.

Another commonly accepted idea about rape is that only women with bad reputations get raped, and nice girls don't get raped. Amir studied two aspects of the rape victim which could shed some light on this myth. He attempted to establish whether the conduct of the victim could have been a precipitating factor in the crime and whether the victim had a "bad reputation." Two of the victims listed in the victim precipitated rapes were under ten years old. It would appear that Amir made no assumptions or automatic exclusions in his study. He found that the number of rape victims who had bad reputations was about twice as high in the victim precipitated group as it was in the group to whom no blame could be attached. However, in the total group he found that less than 20% of them were known to have a bad reputation. Brownmiller[2] cites a figure of less than 4½% of discernible victim precipitation in the crime of rape.

An obvious question is, "What is a nice girl?"

For the purpose of having some measuring stick, if Amir's "bad reputation" criteria is accepted, and the figures doubled to allow for unknown vices, over half of the rape victims would still have to be considered acceptable from the standpoint of reputation "nice girls."

The statistics which Amir presented on victim precipitation also apply to the myth that women are raped because they ask for it. He based his figures primarily on the actions of the victims. If she agreed to sexual relations and then retracted, or did not give a strong negative reaction when the offender made suggestions, then she was assigned to the victim precipitation category. Also, if she was involved in risky situations with sexual overtones, or used indecent language or gestures, or behaved in any way that could be construed as invitation, she was assigned fault. That is, "she asked for it." He placed 19% of the rapes to this category, but he also described almost 93% of them as having been accomplished by total use of force. Whether or not the victim behaved properly, there was no doubt that the act was without consent.

Amir has been accused of being judgmental toward the rape victim in his estimates of victim precipitated crimes. According to every description of the emotional state of the victims, they judge themselves even more harshly. The two emotions most often described are shame and guilt. The female so firmly believes the myths of rape that the 81% who were found to be victims through no fault of their own, kept asking themselves, "What did I do to deserve this?"

Sometime, during the formative years, when the young citizens of tomorrow are learning the so-called facts of life, the word rape acquires a definition in their minds. If they do not discover at that time, they hear shortly thereafter, that a woman really can't be raped against her will. Almost everyone has heard the old story of the lawyer who achieved acquittal for his client by proving this to the jury. All that he had to do was demonstrate that you can't thread a moving needle. A later version is that you can't put a pencil in a moving coke bottle. These clever legal antics are remembered and repeated, while the thousands of women who have been raped by invading armies, as described by Brownmiller (1975), have nothing clever to say. Many of them lost their lives in the experience. Over 26% of the rape victims in Philadelphia (Amir), who were victims of gang rapes, would justifiably feel a sense of bitterness in hearing the old adage, but the small children who have been raped would not understand. If one confines the myth to one female and one male, the point is debatable.

To arrive at an understanding of the position of the female in the situation, one must realize that for centuries she has been considered property of the male. It was not until 1920 that she was given the right to vote, not until this generation that she was allowed to serve on a jury, and today the laws which define rape specifically exclude any undesired sexual act forced on her by her spouse. Weis and Borges[15] describe the female socialization process as follows:

> Women are brought up to think of themselves as sexual objects, subject to being acted upon by men. In this society the relations between the sexes are seen as an instrumental exchange whereby female servility is the price of male protection. The socialization process is such that women are educated to internalize the psychological characteristics of defenseless victims who have not learned or cannot apply the techniques of self defense and so must rely on the protection of others. In addition to what the woman learns about enacting the female role, she learns a mythology about rape that insures a male advantage and provides the rationale for perceiving of her as a legitimate victim for rape.

The male image, on the other hand, is completely the opposite. The caveman is seen as carrying a club and pulling his mate around by the hair. Brownmiller discussed the male image of the heroic rapist. This image was defined when Genghis Khan explained his divine mission. It was to break his enemies — driving them before him and taking all that was theirs, to take their horses between his knees, and press in his arms the most desirable of their women. Throughout history the theme of the heroic male who conquers the world and wins the female is repeated again and again. The myth becomes a part of the beliefs that the male holds about the nature of male power. It also becomes a part of the female attitude. Her role is clearly defined, and if she accepts it, she is defeated by the very act of being threatened.

Another aspect of the male participant, exclusive of superior size and strength, is that since early childhood, the male has been encouraged to participate in aggressive and competitive activities. While this behavior is described to the female as inappropriate, the male is encouraged and trained to use his body. He knows how to fight.

With this background of the two parties to the battle in mind, one can see that what society expects of the female is in conflict with what society has taught her to do. The laws which read that she must "resist to the utmost" required this of her. The issue of consent, the factor which demands a high degree of resistance on the part of the victim, reflects the belief that it is impossible to rape a woman against her will. Surely if our laws acknowledge this fact, it must be true. It is — if the offender does not have help, if he is not so much stronger and heavier that he can render her immobile, if he doesn't use physical restraints, if she is physically and emotionally capable of indefinite resistance, and if she is willing to risk her life to protect her virtue. Maria Goretti defended her Christian virtue by death and made a penitent of the rapist. Three years later, in 1947 Pope Pius XII declared her blessed.[2] There are few women who would knowingly elect to fill the role of the Virgin Martyr since the inspirational value depends on her being beautiful, chaste, and dead.

It must be concluded that whether or not a woman can be raped if she doesn't want to be, depends on whether she is expected to accept severe pain, injury, or even death, in order to be considered unwilling.

All of these myths have long been accepted and have been combined to form the framework of societal attitudes and laws in which the female who reports that she has been raped, again becomes a victim. The procedures, to which she is subjected, have been based not only on rape mythology but also on female mythology. The image of females as liars has been incorporated into the laws which govern the handling of all rape cases. This is demonstrated by the fact that it is the only violent crime for which the statement that the crime was committed must be supported with evidence independent of the assertion of the fact. A report in *Rape and Its Victims*[12] states that the credibility of the rape victim is questioned more than any other crime. Rape is the only crime for which an "unfounded" rate is calculated in the FBI's *Uniform Crime Report*.[14]

Because of the corroboration requirement, the medical institutions become involved in the legal entanglements. Consequently, medical institutions, law enforcement, and the court system all reflect the same mythology which society has accepted. It is not surprising, that in this atmosphere, an estimated 50 to 90% of the rape victims refuse to report the crime. In an effort to understand the importance of the influence of the procedures to which the rape victim is subjected, it is necessary to return to the crime itself, and understand her attitude as she enters the procedural situations.

As described by Hilberman,[8] rape is an act of violence and humiliation inflicted on the victim in which she experiences an overwhelming fear for her very existence, as well as a sense of powerlessness and helplessness which few other events in one's life can parallel. The physical assault upon the body represents a forced surrender of autonomy and control. With the invasion of one's inner and most private space, along with loss of control, rape becomes the ultimate violation of self, short of homicide. Within this context, the site of the invasion becomes immaterial. The immediate needs of the victim are for safety and a sense of control over what has happened to her, and what will happen to her in the future. In addition to this, she believes the rape mythology, which places her in a situation of feeling guilty as well as humiliated. In this emotional turmoil she seeks help.

The attitudes of the individual to whom the victim turns for help are often influential in the reporting process. More rapes are reported by someone other than the victim herself. Burgess[3] describes two stereotypes of the rape victim. First, the ones who are so upset that they report it; second the ones who are so upset and ashamed that they don't report it. The requirements of the law have changed little from the time when the victim was required to make a "hue and cry." Delayed complaints are looked on with suspicion and may be used against the victim by the defense in court.

Public attitudes toward police treatment of the rape victim have been a contributing factor to the non-report of rape. There have been many accounts of insensitivity to the needs of the victim and abuse of police discretion in refusing to file charges. Some of the complaints directed at police procedures are that the victim is questioned repeatedly about the details of the crime, and that there is no privacy for the victim in the questioning process. Remembering the emotional state of the victim, it is understandable that she would not want to talk about the experience unnecessarily. Repeated intimate questioning, by different individuals in the presence of others, could be viewed by the victim as another attack. Remarks that imply that she really enjoyed it, which are reported to have been made, deserve no defense, but it should be pointed out that questioning of the victim is a necessary procedure. If she is extremely emotional, repeated questioning may be necessary in order to get a true picture of what happened and a description of the assailant. Without doubt, some police officers, as members of society and subject to societal attitudes, have been guilty of many of the things of which they are accused, with the resulting stereotype of the unfeeling police officer further persecuting the rape victim. A partial explanation of the victim's negative reaction to the police interview can be found when one understands the conflicting needs of the victim and the police. She is seeking empathy, safety, and a sense of control, and in her emotional state, she fails to recognize that they have duties other than those of meeting her needs. A statement from a victim several weeks after the crime, quoted by Burgess and Holstrom[3] illustrates this point.

> I guess I'm really torn between what they did and what they have to do and my own feelings and needs at that time. Once I was at the hospital things simmered down, but prior to that I just couldn't stand all those officers around. . . . I get confused when I think back to what their duty is and feeling their interest is not in me but to find those guys and that is fine because it is their job. . . . I had to constantly repeat myself; they made me feel I have constantly to prove it. They kept asking the same questions over and over . . . when I went to the station, (referring to the desk officer the next day). . . . He couldn't have been nicer to me. . . . People can't function that efficiently when they are uptight and I sure was uptight. (p. 276)

Had this victim been asked about her treatment earlier, she would probably have confirmed police harassment. Burgess sees the police officer as being on the side of the victim more than any professional group, because they see case after case, and what happens to the victim in the court process.

The police treatment of the rape victim is one area where change is taking place. It has been recognized that law enforcement suffers from a lack of personnel with the special training needed to work with rape victims. Police turnover, rotating shifts, and individual attitudes cause a lack of consistency in police handling of the victim, which results in the equating of reporting with prosecution in the mind of the public.

Changes which are being instituted include guidelines for the handling of the rape victim by all officers involved, increased training for all law enforcement personnel, and specialized training in the unique needs of the rape victim for those whose duty it would be to work with her. The recent addition of the female officer with special training in this area should be effective in making it easier for the embarrassed victim to report the crime, and calling public attention to the fact that law enforcement is becoming sympathetic to the needs of the rape victim.

The rape victim who goes to the hospital because of injuries or for treatment to prevent pregnancy or venereal disease may be refused treatment. The main reason for this is that hospital personnel wish to avoid the legal entanglements resulting from the treatment of a rape victim. If they do accept her, and she is a minor, they refuse treatment until a consent form is signed, and many hospitals report the crime to the police regardless of the wishes of the victim. It is common for her to be subjected to long waits in a public area. In some places, county or city physicians, whose only duty is to collect evidence, may be called which makes another examination necessary for treatment. This is not seen as help by the victim, to whom repeated examinations could represent another assault. When the collection of evidence takes first priority, her needs for a feeling of safety and a sense of control over events, cannot be met.

There are many reasons why this situation exists. The normally smooth running medical institution cannot treat this female as a patient. The fact that she is a rape victim jams the gears of the hospital routine. Many hospitals lack guidelines on the handling of the rape case. This leaves the staff in a state of apprehension in dealing with the patient and the police. Doctors avoid the treatment of the victim because they do not want to become involved in the court process. Many of them lack the necessary training for the proper collection of evidence and other staff members do not have the special training needed to help the victim in the crisis and followup period.

These procedures are now being changed. A number of major hospitals have already established programs which are designed to give the rape victim the treatment and support that she needs, and at the same time, cooperate with the criminal justice system. Many hospitals are adopting procedures described in *Emergency Room Rape Crisis Program*,[6] and programs are being instituted for special staff training with emphasis on crisis intervention techniques. Citizens groups, doctors and hospital personnel are working together in many cities across the country and as a result hospital policies are being changed and rape crisis programs are being established. If the current trend continues, the rape victim can expect to receive the support and understanding which she needs from the hospital staff in the future.

Of all of the areas where the raped female has been met with injustice in the past, the court has been the worst offender. The first offense for which a female could bring suit to the court of the King was rape. Henry of Bratton, a legal authority of the 13th century, described the legal procedure in which the raped virgin was instructed to go at once with a hue and cry to the nearest township, and show her injuries to men of good repute. She should also show her torn garments stained with blood. If the accused protested, she should let the truth be known by an examination of her body by four law-abiding women, sworn to tell the truth. If the crime was established the offender could claim as his defense that he was innocent or that she was previously his concubine and it was with consent and the charge was made because of hatred of another female. He could also take exception on grounds of omissions made in appeal.

At the end of the 13th century under the Statutes of Westminster, the crime became a felony and dames as well as damsels were protected. But there were needs for precautions. Warnings were issued that if the female should be of evil fame or stand unsupported by others, if she was where she could be heard and made no outcry or if she concealed the crime for a considerable time, one should beware. These conditions carry a strong presumption that the testimony is false or feigned.[2]

The American legal system adopted the English attitudes along with the English laws and they prevail in our courts today. As described in the *Journal of Criminal Law and Criminology*,[5] rape is the only crime for which the usual safeguards for protecting the accused are not considered adequate, as demonstrated by the corroboration requirement. The entire process is designed with the goal of protecting the falsely accused offender, with the consequence that it is the victim's testimony which is the subject of the inquiry and not the act of rape itself. If the offender does not choose to testify, he may remain silent and his past transgressions are not viewed by the court. The victim is not afforded that privilege. She is required to prove herself against one myth after another. Almost every rape case is tried before a jury because the attorney for the defense knows that if he can convince the jury that the victim isn't a nice girl, that she really didn't resist as much as she might have, or that she brought it on herself, they will find him not guilty whether she was raped or not. Character assassination of the victim has been the result, and many abuses of the victim have been allowed under the guise of trying to prove consent.

The common practice of humiliation of the victim in the court process requires no elaboration, but she has one last insult to endure. The Lord Hale jury instructions used in the 17th century which noted the ease of making the charge, and the difficulty of proving it are still used today.

The jury instructions along with the questioning of the victim's moral character may soon be deleted from the court process. A number of states now limit the introduction of material about the victim's sex life unless it has a bearing on the case being tried, and there is a conviction now under appeal, because the judge refused to give the traditional jury instructions, which he viewed as assisting in brutalization of the rape victim.[9]

One radical change which has already been instituted in a number of states is the redefining of the rape laws to laws on sexual assault. The word rape is deleted and several degrees of assault are defined. This eliminates one problem presented in the courts in rape cases. The penalties for rape have been so severe that juries have at times been influenced in their decisions because of them. If the crime did not cause severe injury or there were extenuating circumstances, a jury has been reluctant to send a man to prison for a term of 40 years to life. These new laws also protect the male rape victim as well as the female and this, along with other changes, should make it easier for the victim to report the crime — a giant step forward.

Changing attitudes and changing procedures in the crime of rape reflect a growing trend toward viewing rape as a violent crime of assault rather than a deviant sexual offense. The keystone in the arch of rape mythology has begun to crumble. The statistical crime of rape will increase drastically when humane treatment of the victim in the medical, legal and social areas allows her to cry out for protection. This cry must be answered by the criminal justice system, but in the meantime, the system can do much to combat the crime of rape by supporting and implementing the procedural changes which in turn affect societal attitudes.

As the myths go up in smoke so should the crime of rape eventually become an ember. One might deny this and insist that the concept of the aggressive male and submissive female will be with us forever. But if the rape mythology which has remained unchanged throughout recorded history can die of old age, other equally ancient concepts can meet the same fate. □

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GUIDELINES FOR THE TREATMENT OF SEXUAL ASSAULT VICTIMS*

SOUTH CAROLINA COMMITTEE ON SEXUAL ASSAULT**

A. GENERAL

Upon arrival, the patient should be placed in a private examining room. Under no circumstances should activities take place in the waiting room or other public area.

Because it is likely the patient will be suffering emotional trauma, it is essential that treatment be rendered promptly, carefully, and sympathetically. Comments by institutional personnel such as, "Where is the rape?" should be avoided.

A rape crisis counselor or sympathetic hospital worker should remain with the patient from arrival through any followup investigation conducted at the institution in the event the patient desires such support. The worker should provide emotional support but should not assume the role of interrogator.

Hospital personnel will notify the parents or guardian in cases of minors or persons requested to be notified by adults. If the patient's family or friends should use such terms as "ruined," "violated," "dirty," etc. in reacting to the patient's experience, they should be counseled against so doing.

If the victim is under 18, senile, developmentally disabled, or mentally ill, the hospital must notify the County Department of Social Services, the Sheriff's Office, or Chief Law Enforcement Agency in accordance with South Carolina law. Otherwise, the hospital will abide by the patient's wishes as to notifying authorities.

Unless circumstances make it necessary, no activities should be undertaken before the need to preserve evidentiary material has been discussed with the investigating agency.

Hospital personnel should be prepared to accept and treat rape victims without undue delay, as valuable evidence may be lost with the passage of time.

B. MEDICAL RECORD

The medical record should contain documentation of the history, examination, and treatment of the patient. It should give a description of the physician's findings and all services rendered.

Since the determination of whether or not a rape occurred is the responsibility of the court rather than those treating the patient, the medical record should not reflect any conclusions regarding whether a crime has been committed.

Proper completion of the medical record is extremely important. While it should be remembered that both the physician and the medical record may be subpoenaed, reason for subpoenaing the physician may be to clarify an issue that would not have arisen if the record had been carefully documented. Also, a well-detailed record will assist in recalling the incident in the event the physician or others are called upon to testify in court.

C. EXAMINATION AND TREATMENT

The purpose of the medical examination will be primarily to diagnose and treat injury, and to provide emotional first aid, and secondarily to gather evidence to assist in future prosecution. The actual examination and treatment of any patient must depend on the physician's judgment of the patient's needs as well as her wishes.

A nurse should be present during the examination and treatment of a female patient to serve as witness. Her name should be noted in the medical record. No law enforcement officer should be present during the examination and treatment of the patient.

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* Endorsed by the South Carolina Medical Association, the South Carolina Hospital Association, and the South Carolina Committee on Sexual Assault.

** Reprint requests to SCMA Headquarters, P. O. Box 11188, Columbia, S. C. 29211

History

A good history must be obtained in the form of direct quotations from the patient. Particulars of the alleged attack pertinent to the medical examination should be noted. Date, time, place, type of sexual act(s) performed, ejaculation and force used should be documented. Date and time of last consenting intercourse, menstrual history, and use of contraceptive devices should also be noted. The history should be non-judgmental. Information concerning activity following an alleged rape (walking, running, physical effort, vomiting, urinating, bathing, douching or anything else that might promote drainage of the vaginal contents, changing clothing) should be noted.

Examination

A hospital employee or physician will explain fully the procedure to be followed in the examination of the patient. He or she will then obtain consent forms for examination, treatment, and collection of evidence. The patient's consent should be given with the knowledge that although evidence is routinely gathered as part of the medical examination and treatment, it will not be turned over to police without her consent. The importance of consent for release of information and evidence to the police should be encouraged and explained with the understanding that the patient is under no obligation to agree to subsequently prosecute. Examination and treatment is not to be withheld if the patient fails to agree to release information and evidence to the police.

The examination should be performed by a physician who has had training in sexual assault examination. Such a physician should be available at all times. Interns and residents are less suitable since they may not be available for a subsequent court appearance. If the patient desires her private physician, all efforts should be made to make this possible. It is less likely, however, that a private physician with little experience in rape examination will successfully preserve all the evidence necessary for a successful prosecution.

a. General Appearance
   Bruises, lacerations, torn or bloody or otherwise stained clothing, as well as the emotional condition of the patient, should be recorded.
b. Check breasts, abdomen, knees, elbows, head, etc. for injury. Be alert for bite marks.
c. Obtain pulse, blood pressure, temperature, respiratory rate and blood samples.
d. Note broken fingernails. Note contusions, abrasions or lacerations of genitalia, internal and external. If hymen is present, describe condition such as recent or old lacerations. Note deposits of semen, hairs, and fibers. Do a bimanual examination noting uterine size and pain. This may be done rectally in children.
e. Speculum examination. The cervix and vagina should be inspected by a non-lubricated but water-moistened speculum. A vaginoscope may be useful.
f. Anal examination: Where indicated, anoscope examination should be performed.
g. Oral examination: Where indicated, the oral cavity should be inspected.

Laboratory specimens

The following tests should be made in accordance with sound medical practice, regardless of whether or not specimens are to be obtained for forensic investigation. Upon proper authorization, these specimens and/or reports may later be released to a law enforcement agency.

a. WET MOUNT of material from fornix, rectum or mouth should be examined immediately for motile sperm. Slides appropriately preserved for Papanicolaou stain should be obtained.
b. Separate SMEARS from vulva, rectum or mouth may be appropriate.
c. PREGNANCY TEST to exclude pre-existing pregnancy may be appropriate.
d. A CULTURE should be taken for Neisseria in appropriate medium such as Thayer-Martin for Transgrow.
e. VDRL or other serologic test for syphilis should be conducted.

Prophylactic treatment for venereal disease should be initiated in all cases of suspected rape unless contraindicated. The vagina may also be flushed with an iodoform or Benzalkonium Chloride solution.

Treatment for prevention of pregnancy as a result of the alleged rape should be discussed with the patient and made available if desired. If the institution or treating physician has a policy against treatment for prevention of pregnancy, the patient should be provided with information explaining that policy and stating where such treatment can be obtained.

After examination and collection of specimens and other evidence, the patient should have the opportunity to attend to personal hygiene needs, including washing, douching, brushing teeth, etc., to provide her with an opportunity to regain her optimum physical and emotional well-being. The patient should leave with police, friend, or relative and not be left stranded to find a way home.

Followup Care

Followup care and consultation should be initiated. Followup care should include:

1. Treatment of contusions, lacerations, etc.
2. Surveillance for venereal disease.
3. Surveillance for pregnancy.
4. Counseling to prevent any significant, long-term, harmful psychological effects. Such counseling should involve family or friends as appropriate.

If the patient has a personal physician, referral should be made to that physician for followup care. If the patient does not have a personal physician, treatment should be rendered at the institution or by an appropriate treatment source referred by the institution. Additional treatment sources are ambulatory care facilities, community health centers, local mental health centers, and rape crisis counselors.

Where followup treatment is to be provided by a source other than the institution initially treating the patient, the institution should provide the followup treatment source with all information that would be helpful in such treatment in accordance with institutional policies dictating such release.

Evidentiary Material

In obtaining material of an evidentiary nature, standards and procedures should be coordinated with the investigating law enforcement agency. Material should be obtained only when there is a clear understanding that analysis of this material will be done by a laboratory prepared to make forensic analyses: many institutional laboratories are not so prepared.

Specimens for forensic analysis should be obtained by a responsible physician in the presence of the witness and personally placed in the custody of the law enforcement agency by him/her recording names, dates, and time of the transfer of such custody so that the chain of evidence is properly maintained. These specimens may duplicate those obtained during examination and treatment of the patient.

Slides should be clearly labeled by etching the patient's name on them using a diamond pencil or medium soft lead pencil if the slide has frosted end. (A ball point pen, indelible or wax pencil should not be used.)

The following procedure should be followed in gathering evidence:

The patient should be undressed as carefully as possible, and all items of clothing kept separated from each other and placed in separate containers to avoid contamination of evidence. Clothing that is wet or damp, whether from blood or other staining, must not be tightly enclosed in plastic bags for any length of time. With the consent of the patient, clothing worn into the institution should be given to the law enforcement personnel immediately with proper record of chain of custody. If possible, a change of clothing should be brought for the patient by a friend or relative; if not, the police may accompany the victim to her home for the clothing.

Following completion of the examination, the sheet from the cot on which the patient was undressed and examined should be submitted to law enforcement personnel for further processing for trace evidence that may have fallen to this area. Accordingly, the sheet must be folded carefully in a manner appropriate to prevent loss of such evidence.

If seminal stains, fluid or dried, are located on external surfaces of the body, they should be removed carefully with a saline moistened cotton swab, and placed in labelled containers. Labels should include information as to what portion of the body they were found and a description of appearance when discovered.

Woods or ultra violet light examination will aid in the detection of seminal fluid.

If appearance of pubic hairs suggests possibility of presence of semen, such hairs should be removed by cutting with precautions to preserve the deposit before any other samples are obtained.

If examination fails to disclose any suspicion of presence of semen on pubic hairs, the area should be combed with a clean new plastic comb to obtain extraneous hairs and fibers that may have originated from the assailant. These hairs should be placed in a sealed envelope along with the comb. About ten known pubic hairs should be plucked to obtain specimens with roots and placed in a clean, sealed envelope.

Examples of head hairs should also be obtained by combing with a clean new comb. Special attention should be accorded to sites of injury in hair-covered regions, such as eyebrows, and hairs should be plucked from these sites.

Material from vaginal pool, rectum, mouth and from any suspicious areas about the vulva, legs or other external areas should be aspirated (swabbed if necessary). This material should be preserved in a test tube and can be examined by police and laboratory for:

a. Acid phosphatase
b. Blood group antigen of semen
c. Precipitin tests against human sperm and blood

Blood type of the victim is a crucial factor in the investigation, as it may be required for indicating the source of the blood stains on a suspect's clothing or evaluation of results of blood group determination of specimen from vaginal pool, rectum or mouth.

The center of any bites should be wiped with a saline-moistened swab for saliva typing of the subject. The swab should be labeled and refrigerated.

If indicated, fingernail scrapings should be made by using broken swab sticks and collected along with nail fragments in clean envelopes, sealed and labeled.

It is important that a "chain of evidence" be maintained. That is, a method should be established to insure that all persons who were responsible for keeping or handling the evidentiary material can be easily traced. Consequently, it is advisable that evidence be handled by as few personnel as is possible.

The taking of photographs at the institution will be governed by the policy of the institution. Should the institution permit photographs to be made, a black and white self-developing camera should be available for that purpose. If clothing is in disarray, the patient should be photographed before disrobing. Bite marks should be photographed with a ruled scale for possible matching with a suspect. External bruises and scratches should also be photographed.

Equipment and Instruments (packaged kit for most items is advised)

a. Camera (Self-developing if possible)
b. Paper bags for individual items of clothing
c. Sealable paper envelopes (2) for fingernail scrapings of each hand
d. New plastic comb and envelope for combed specimens
e. Envelope for known pubic hair (pulled)
f. Woods lamp
g. Vaginal speculum
h. Cotton swabs
i. New microscopic glass slides
j. Pap fixative
k. Diamond pencil
l. Thayer-Martin plates (3)
m. Empty red rubber stoppered test tubes (10)
n. Oxalate tubes (grey tube)
o. Urine container for pregnancy test

Paperwork

a. Consent form for examination, treatment and release of information
b. Sexual assault form
c. Laboratory request vouchers for all requested tests
d. Labeling of evidence should include
    1. Patient's name
    2. Patient's hospital number
    3. Date and time specimen collected
    4. Person collecting sample (signature and printed)
    5. Person receiving sample (signature and printed)
    6. Keep a record of the chain of evidence indicating who collects and receives all items of evidence from start to finish.

Summary of Necessary Laboratory Work

Blood studies
a. Possible blood typing or toxicology
b. VDRL for baseline data

Urine
a. Pregnancy test if indicated
b. Drug levels if indicated

Vaginal, oral, rectal aspiration
a. Pap smears
b. Wet preparation for sperm
c. Moistened swab for acid phosphatase
d. ABO antigen from "suck mark" (Saliva), or seminal fluid — saline moistened swab in clean test tube.

Saline washing from perineum (particularly minor patients)
a. Acid phosphatase
b. Pap smear
c. ABO antigen test for sperm

Cultures
a. Saline moistened swab of suspected seminal fluid spots on body or clothing on room temperature Thayer-Martin media for gonococcus
b. Urethral, rectal, cervical swabs on room temperature Thayer-Martin media. ☐

MEDICAL MEETINGS

The William S. Hall Psychiatric Institute announces the scheduling of the following meetings. For additional information, contact Joe E. Freed, M.D., Chief, Continuing Medical Education, William S. Hall Psychiatric Institute, P. O. Box 119, Columbia, South Carolina 29202.

1. "Assessment and Management of Dangerousness with Suicidal Potential," October 10, 1978, 9:30 a.m. - 4:00 p.m., The Forum, William S. Hall Psychiatric Institute, Columbia. AMA Category I credit hours will be offered.
2. "Psychopharmacology for the Primary Physician," March 29-31, 1979, Hilton Head Inn, Hilton Head, South Carolina. AMA Category I credit hours will be offered.

The South Carolina Medical Association Speaker of the House, J. Gavin Appleby, M.D., announces the 1978 SCMA Mid-Winter Meeting of the House of Delegates, scheduled for November 3-5, 1978 at the Hyatt on Hilton Head Island, S. C. Information will be forthcoming from SCMA Headquarters to County Societies and Delegates and Alternates.

The Menninger Foundation announces a summer workshop for physicians entitled "Physicians and Their Families," to be held in Estes Park, Colorado, August 13-18, 1978. The AAFP has given approval for 25 prescribed hours of continuing education credit, and the workshop is also accredited for 25 hours of AMA continuing medical education credit in Category I. For information, write Conference Registrar, YMCA of the Rockies, Association Camp, Colorado 80511.

Editorials

THE CONCEPT OF MIST

MIST (Medical Information Service via Telephone) is a new cooperative program between the Medical University Hospital and the College of Medicine at the Medical University of South Carolina, and the physicians and dentists in South Carolina. MIST provides the means for prompt patient referrals and direct consultations with specialists at the Medical University. Physicians are encouraged to use this service for follow-up on patients referred to the Medical University.

Since its inception in March, 524 calls have been received by the special MIST operators, for an average of 14 calls per day. MIST serves to increase the quality of health care in South Carolina by making the research and technical expertise of the Medical University available to rural and urban practices alike. Through consultation and prompt referral, the treatment of patients is facilitated.

Information on MIST has been sent to all physicians and dentists in the state. Through MIST, every member of the faculty and staff at the Medical University can be considered "on call." The MIST operators will find the individual specifically qualified to answer a question, and the caller is referred rapidly to the appropriate office.

A toll-free number (1-800-922-5250) is provided for the practitioners' use. This number will be answered on weekdays from 8:30 a.m. to 5:00 p.m. by the trained MIST operators. After 5:00 p.m. and on weekends, this number will be answered in Hospital Patient Admissions.

— William H. Knisely, Ph.D.
President, Medical University of
South Carolina

CATEGORY I CREDITS

The increasing importance of category I credits is well-known. The recently revised (February 1978) edition of the *Manual for Accreditation of Hospitals* by the Joint Commission of Accreditation of Hospitals emphasizes these requirements for continuing education for the medical staff.

The following pertinent requirements should be brought to the attention of medical and administrative staffs which wish to maintain full accreditation:

(1) The medical staff shall participate in a program of continuing medical education as a hospital staff function. The complexity of the programs are related to the size of the hospital staff. With the smaller, medical staff programs should be at least quarterly. In larger hospitals, programs should be weekly or monthly and which may be oriented to a particular department, service, or section of the staff.

(2) The programs should be related to patient care performed in the hospitals and based on patient care evaluation studies of a concurrent and retrospective type.

(3) Participation by staff members should be documented.

(4) Participation by staff in continuing medical education (CME) programs other than in the hospital should also be documented.

(5) In conjunction with the programs, library materials and audiovisual aids should be available.

(6) Hospitals and medical staff should, where reasonable and feasible, seek to have their programs accredited by the Continuing Medical Education Committee of the State Medi-

cal Association for intrastate Category I AMA Physicians Recognition Award Credits.

The SCMA Committee on Education is approved for granting such intrastate certification so that Category I AMA Physicians Recognition Award Credits may be earned by participation and attendance at these programs by the staff. More specific details of the requirements for Standard V may be obtained by reviewing this manual.

— Vince Moseley, M.D.
Former Chairman, SCMA Medical
Education Committee

THE LIMITS OF ALTRUISM

At the annual meeting, the House of Delegates of the South Carolina Medical Association passed a resolution suggesting that Medicaid recipients should pay a portion of their bills. Behind the resolution was the notion that such assumption of partial fiscal responsibility might act as a deterrent to excessive use of health care services. The president of SCMA was quoted in the lay press as acknowledging that this resolution was not entirely "altruistic." This acknowledgement has already been used by some to fan the fires of fashionable criticism of organized medicine.

The same week, national news magazines gave prominence to a special article which appeared in the *New England Journal of Medicine* — an article which could have been amplified by any practitioner.[1] The article acknowledged that the physician's ideal, like that of Faust, is to "know all, love all, heal all." Among the forces which frequently thwart the realization of such an ideal stands "the hateful patient." Four types of such patients were identified. First, there is the *dependent clinger,* who exhausts the physician's stamina by a self-perceived "bottomless need" for medical services. Second, there is the *entitled demander* (a lawyer was cited as the example), who intimidates and threatens the physician to provide more and more services. Third, there is the *manipulative help-rejector,* who persists in a search for remedies but insists that nothing helps; this is the common "crock." Finally, there is the *self-destructive denier,* who finds his "main pleasure in furiously defeating the physician's attempts" to preserve life.

Such patients inevitably evoke negative feelings in their physicians. The thrust of the essay was that physicians should acknowledge such feelings, that in fact such feelings constitute an important part of the "data base." Such insights may be helpful, but it seems likely that most physicians will continue to recognize that, as one physician put it, "five percent of patients cause 95 percent of my headaches."

We do not suggest that such "hateful patients" are more prevalent among Medicaid recipients. We do suggest, however, that the purest altruistic motives become contaminated when such patients receive a *carte blanche* to medical services, bearing no fiscal responsibility themselves.

Are there limits to altruism? The subject would be worthy of lengthy debate in the grand Socratic style. For practical purposes, however, the major conflict seems to us to be the issue of "need" versus "right." Health care providers, like others in the "helping professions" (including teachers, counselors, and social workers), view services in terms of *needs.* Altruism, then, would be defined as the refusal to deny *needed* services. On the other hand, many others (including some lawyers, politicians, and rights advocates) view services in terms of *rights.* It is not up to the provider to ascertain whether or not *need* exists; the patient possesses a basic *right* to services, needed or not.

The issue seems basic, and it is comforting to know that it is receiving serious discussion these days by sociologists and others.[2] We feel that our profession must remain altruistic when clear *need* exists. But if altruism must also apply to alleged "rights" to services, irrespective of need, it seems doubtful that the resources of either our profession or of society will ultimately suffice. It is the nature of man that a few will perceive bottomless needs, irrespective of pathophysiology. Unfortunately, any system for financing health care delivery must take into account the incessant demands of these few.

— CSB

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CLINICAL DECISION MAKING AND LABORATORY TESTS

Fifty-eight years ago, Dr. Kenneth Merrill Lynch, Professor of Pathology at the Medical College of South Carolina, wrote an editorial in these pages on "The Art in Medicine," which included the following statement:

> "A new art in the medicine of today lies in the use of the various tests, apparatus and procedures, without misusing or abusing them. It is the wise physician who can gather up the scattered evidence in the case and make it fit the main lead, the patient himself — who has the knowledge and the ability to pick out the useful and disregard the irrelevant and the useless. . . ."
>
> "Too much of the old art of medicine seems in danger of loss in the maze of scientific procedure. . . ."

Rational and discriminating use of laboratory tests is now recognized to be one of the central issues in the problem of cost control of medical care. Fortunately, some medical educators now address this problem as a subject which deserves considerable emphasis in the curriculum. In the editorial below, Dr. J. Daniel Love illustrates how clinical logic can be applied in the use of such tests.

—CSB

Your stockbroker brother-in-law (the one who likes you) calls you off the golf course to inform you of an anticipated major announcement by Underseas Oil Speculators Ltd. that will blow the top off the stock's selling price. "Buy all you can this afternoon," he pants into the phone at the pro shop. Withdraw your savings? Arrange a fast demand note? What if the bottom drops out instead? When to get in? When to get out? A thousand considerations race through your greed-stricken computer.

What you decide will be a composite of all these considerations. Reconstructing just how and why you arrived at the decision to mortgage your life away is made impossible by the paucity of quantifiable input. "Great expectations" cannot be measured (so I'm told); prior performance of this stock and of the petroleum group can be. The pros, the technical analysts, pay their rent by systematically characterizing the performance of stocks, of the market, and of the large institutional investors whose decisions can influence stock prices. The successful analysts make calculated rapid decisions based on constantly changing data, to buy or sell at a moment's notice in order to maximize profits and cut losses. They may respond to the "major announcement rumors" if the data support the possibilities, but they will be prepared to sell the instant it is apparent the interest in the stock has failed to materialize or be sustained. In other words, success is measured by the ability to maximize gains or benefits and minimize costs or losses.

We physicians unwittingly function day in and day out as do technical analysts in our clinical decision making. Our success depends upon the availability of data, the thoroughness with which we process the data into valid information, the clarity of our goals, and our appreciation of how critical timing can be to the benefit-cost relation in clinical decision making.

Journal articles abound that are devoted to cost-benefit analyses, Bayesian approaches to clinical problems — all applying probability theory to enhance the accuracy of our decision making. Some feel the "healing art" is threatened and diminished by this promotion of probability theory and of computers (as its outgrowth) in medicine. Others are programming computers they expect to replace the clinician.

The truth is that no inorganic computer can match the physician's ability to validate data obtained from sources that often couldn't be represented on a punch card. The only computer program that can reliably, but efficiently, determine whether or not a patient has a significant symptom is that housed between the ears of the seasoned clinician. The same seasoned clinician is the only computer that can make and implement a decision appropriate to the individual patient and his particular circumstances.

Because virtually no diagnostic or therapeutic decision can be made with total certainty or with no risk, techniques for maximizing benefits while minimizing costs are crucial to all physicians.

Effective data acquisition is itself a complex application of the scientific method of hypothesis generation and testing. Performed by the seasoned clinician, the process is an aggressively focussed search for an explanation of the findings. The data is processed as it is collected, utilizing probability assessments conditioned by the physician's fund of information to direct the search. Often, even the excellent physician's approach is marred by inadequate or incorrect entries in his data bank and/or inconsistent utilization of his available information.

Too many of us harbor information acquired out of context, developed from anecdotes or memorable errors, or accepted from the often erroneous medical literature. For both the novice and seasoned clinician many of these deficits can be corrected by a knowledge of a test's sensitivity and specificity, of the prevalence of the disease in the population and of Baye's theorem. Baye's theorem permits correlation of the results of a well characterized test with the estimated prior probability to arrive at the likelihood that a patient with an abnormal (or normal) test has the disease. Likewise, the same principles can be used to arrive at a threshold probability of disease above which the benefit of treatment will exceed the cost or risk of treatment.

Possibly more important than applications to individual patient care today will be improved understanding of the natural and treated history of diseases (leading to more accurate assessment of prior probability of disease) and to a broad range of population oriented health decisions, such as the utility of various screening examinations and procedures, the safety and efficacy of health practices, and the limits of normal for many tests.

Our greatest hindrance in applying this available technology is the paucity of reliable information on diagnosis and therapy in the medical literature on our practices, and our unstudied reluctance to admit that the "art" of medicine would benefit from the application of "new" scientific principles at little cost.

J. Daniel Love, M.D.
Director of Education for Internal Medicine
Richland Memorial Hospital
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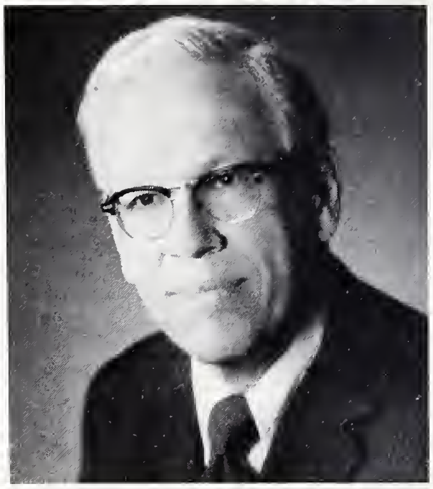
President's Pages



COST CONTAINMENT — WHAT DOES THE HEW REALLY WANT?

Most of us viewed with alarm the Carter Administration's efforts early this year to control rising health care costs through a "mandatory hospital controls bill" (H.R. 9717). Subsequently, the Voluntary Effort was initiated by the AMA, the American Hospital Association, and the Federation of American Hospitals, and was acclaimed by many as a notable and worthwhile project, which should be given a reasonable chance to succeed.

One would think that Government would surely welcome such serious efforts from the private sector. Instead, what has happened? It now comes to light (AMA Newsletter, May 26) that the HEW moved to sabotage the Voluntary Effort by asking the Justice Department to delay granting the nation's hospitals an antitrust law exemption in order to carry out the program. The HEW has been hostile to the Voluntary program from the beginning, contending that the only answer to hospital costs is the Administration's *mandatory* controls bills. Michael Bromberg, Executive Director of the Federation of American Hospitals, said recently that HEW's actions show that the Administration "is desperate for a legislative victory."

By the time this is published, some form of legislative action may already have been accomplished. I am writing this, therefore, not to influence or even to predict the outcome, but instead to comment upon "intent." Has the government (HEW) shown "good faith"? Does the HEW really want cost containment? Or is the true object of the government actions, from the very start, to gain CONTROL OF HOSPITALS AND PHYSICIANS?

Here in South Carolina, the SCMA is working with the South Carolina Hospital Association in an on-going program of cost containment of our own. Since we have undertaken such a state program, we *must* act in good faith (regardless of the actions of the HEW) and must do our utmost to achieve the desired end. However, it is my strong belief that we must at every opportunity, vigorously and without fear or equivocation, point out that government itself is responsible for many of the important factors in rising health care costs: 1.) general inflation, the result of government spending at all levels, now taking up about 40% of the GNP; 2.) inflated demands for medical care brought on by government programs, such as Medicare and Medicaid, perceived by the public as making such care free at the point of delivery; 3.) direct effect of government regulations, including minimum wage, "safety" regulations, etc. We should continue to point out other factors, also, in rising health care costs: technologic advances, new diagnostic procedures, new modes of therapy, new life-saving devices, etc. — benefits that are undeniably expensive, but certainly not to be denied to our patients. Finally, we should point out that our aging population, the result of the past *successes* of our medical care system, inevitably requires more medical care, at higher cost.

Most of the proposals for cost containment in South Carolina relate primarily to increasing physician and patient awareness of the costs of specific diagnostic procedures and therapeutic measures. Among the suggestions which should be considered are the following:

1. Making available to physicians the costs of common laboratory studies, diagnostic procedures, medications, treatments, etc.
2. Providing the Attending Physician, as well as the patient, with an itemized statement of charges for each patient so that both may be aware of the costs entailed. This measure has been effective in Florida, according to reports received.

Other proposals include further implementation of pre-hospitalization diagnostic procedures and laboratory testing in an effort to decrease the length of the hospital stay, increased use of Ambulatory Care surgical facilities, and measures to decrease the use of costly emergency room facilities for non-emergency ailments.

Let me emphasize unequivocally, that for each physician, dealing with each individual patient, the primary, paramount responsibility is to give that patient the best possible care. As physicians, we must *not* be trapped into a voluntary promotion of the "rationing" of medical care. In regard to this important subject, I urge every physician to read the article starting on page 12 of the April 29, 1978 issue of *Human Events,* by Walter Donway, entitled "Administration Wants Strict Rationing of Medical Care." This article documents the step-by-step pursuit of this apparent HEW "goal." Read it — to be informed is to be forewarned.

John C. Hawk, Jr., M.D.
President

AUXILIARY PRESIDENT'S PAGE

The Auxiliary Page this month is devoted to the project adopted by the Columbia Medical Auxiliary to educate the community regarding the Heimlich Maneuver for victims of food choking.

THE HEIMLICH MANEUVER

The Columbia Medical Auxiliary has adopted as a major health project a campaign to give wide community exposure to the Heimlich Maneuver, the life-saving technique for victims of food choking.

Over 10,000 information sheets illustrating the Heimlich Maneuver have been distributed to all Columbia Middle schools, major grocery stores and restaurants.

Coburg Dairy of Charleston has agreed to devote one side of their milk cartons to this project for the month of July. Watch for it!

Mrs. Richard Truluch is Chairman of this project.

Mrs. Alton Brown (Nellie Claire), President
SCMA Auxiliary

RESCUER STANDING
Victim standing or sitting

☐ Stand behind the victim and wrap your arms around his waist.

☐ Place your fist thumb side against the victim's abdomen, slightly above the navel and below the rib cage.

☐ Grasp your fist with your other hand and press into the victim's abdomen with a **quick upward thrust.**

☐ Repeat several times if necessary.

When the victim is sitting, the rescuer stands behind the victim's chair and performs the maneuver in the same manner.

RESCUER KNEELING
Victim lying face up

☐ Victim is lying on his back.

☐ Facing victim, kneel astride his hips.

☐ With one of your hands on top of the other, place the heel of your bottom hand on the abdomen slightly above the navel and below the rib cage.

☐ Press into the victim's abdomen with a **quick upward thrust.**

☐ Repeat several times if necessary.

1978-1979 SOUTH CAROLINA MEDICAL ASSOCIATION COMMITTEES

Reinstating a procedure previously followed in The Journal, *we are listing below the SCMA Committee Members appointed by the President, with the advice and consent of Council, for the year 1978-1979.*

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S. C. DERMATOLOGICAL ASSOCIATION: Dr. A. M. Robinson, Columbia, S. C. (right), out-going President, is seen looking on during the presentation of placques of appreciation to the guest speakers of the S. C. Dermatological Association. Dr. Lamar S. Osment, Professor of Dermatology, University of Alabama Medical School and Dr. William P. Jordan, Professor of Dermatology, Medical College of Virginia (left), are receiving the awards. To their right is Dr. Tommy Griffin, Spartanburg, in-coming President.

It was light blue. My mother thought it was the most beautiful car she'd ever seen.

Relinquishing the relic.

It was a relic. The oldest car in town. Mom prayed for a new one. But my father said, "No. This one runs like a clock."

Actually it ran like a clock that had to be constantly repaired.

A new muffler every year. Unending trouble with the transmission. The brake linings. The carburetor. Even the upholstery was shot. My sister Ginny called it "Clarke's Clunker."

A new car. It seemed possible only in the far distant future. Because Dad had six kids and a house to take care of. But without saying a word about it, he joined the Payroll Savings Plan at work. And started buying United States Savings Bonds every week.

Then one morning in the fall, he got up early and left without saying where he was going. We were still around the breakfast table when he came back in the door. Smiling.

"How'd you all like to go for a ride in a brand-new car?" he said.

It was light blue. My mother thought it was the most beautiful car she'd ever seen. And it was the first one they'd ever owned brand new from the factory. She polished it every chance she had. And was forever bragging to the neighbors about all the options, even though she didn't understand half of them.

That was ten years ago and Dad is still driving it today. One of the oldest cars in town. But this one shines and drives like new. Dad has saved enough Bonds to put most of us through school and still buy another car, but Mom won't hear of it.

The way she sees it, "They just don't make 'em like that anymore."

Whether you're saving for a new car, or even a new home, U.S. Savings Bonds can make it happen. Buy Bonds. They're the dependable way to save.

Take stock in America.

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 AUGUST 1978 NUMBER 8

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association. Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00 in the U. S. ($7.00 per year, Foreign). Application to mail at controlled circulation rates is pending at Columbia, SC.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 AUGUST 1978 NUMBER 8

WHICH DROWNINGS ARE PREVENTABLE? AN IN DEPTH STUDY OF 62 DEATHS IN CHARLESTON COUNTY, SOUTH CAROLINA*

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Over 8,000 persons die by drowning in the U. S. each year to contribute to the toll of accidental death. Such deaths seem especially tragic because they tend to select the young and healthy. Near drownings occur in numbers far in excess of recorded hospitalizations and emergency room admissions.[1] In South Carolina during the years 1968-1972, 909 persons died by drowning, or approximately 182 persons per year.[2] Although these deaths occurred in a variety of bodies of water, the coastal area of Charleston contributed its share of the fatalities (Fig. 1). Most of the victims drowned while boating, fishing or swimming; in eight instances, more than one person died. The data in Figure 1 were derived from death certificates which tend to be limited in information. Thus, an in depth study of the causes of recent drownings was needed to analyze the deaths in greater detail.

METHODS

Data at the Charleston County Coroner's office were reviewed for 62 drownings that occurred from January 1, 1973 to July 1, 1976. The files included coroner's reports, police reports, various newspaper accounts, and autopsy reports. Depending on the circumstances and age of the victim, blood alcohol studies were done on 25 of the 62 victims.

RESULTS

As depicted in Figure 2, the frequency of the accidental drownings varied with age, the largest number of fatalities being in the age groups 10-14 and 15-19. In both groups, the number of black male victims was significantly higher than the number of white males. Only three children under age four drowned, but all were white; this may be due to greater exposure to water at an earlier age and/or lack of supervision. Thirty-eight of the 62 persons who drowned were black, 22 were white and two were classified as others. Male drownings were higher for blacks in the age groups between 5-19 and 25-49. An unexplained deficit of black drownings occurs in the age group 20-24. After age 50, there are no racial differences.

As expected, the weekend had the highest toll. Figure 3 shows that Sunday had the highest rate of victims (26%), followed by Friday (21%). The day of least occurrence was Wednesday (6%). As shown in Figure 4, the afternoon hours claimed

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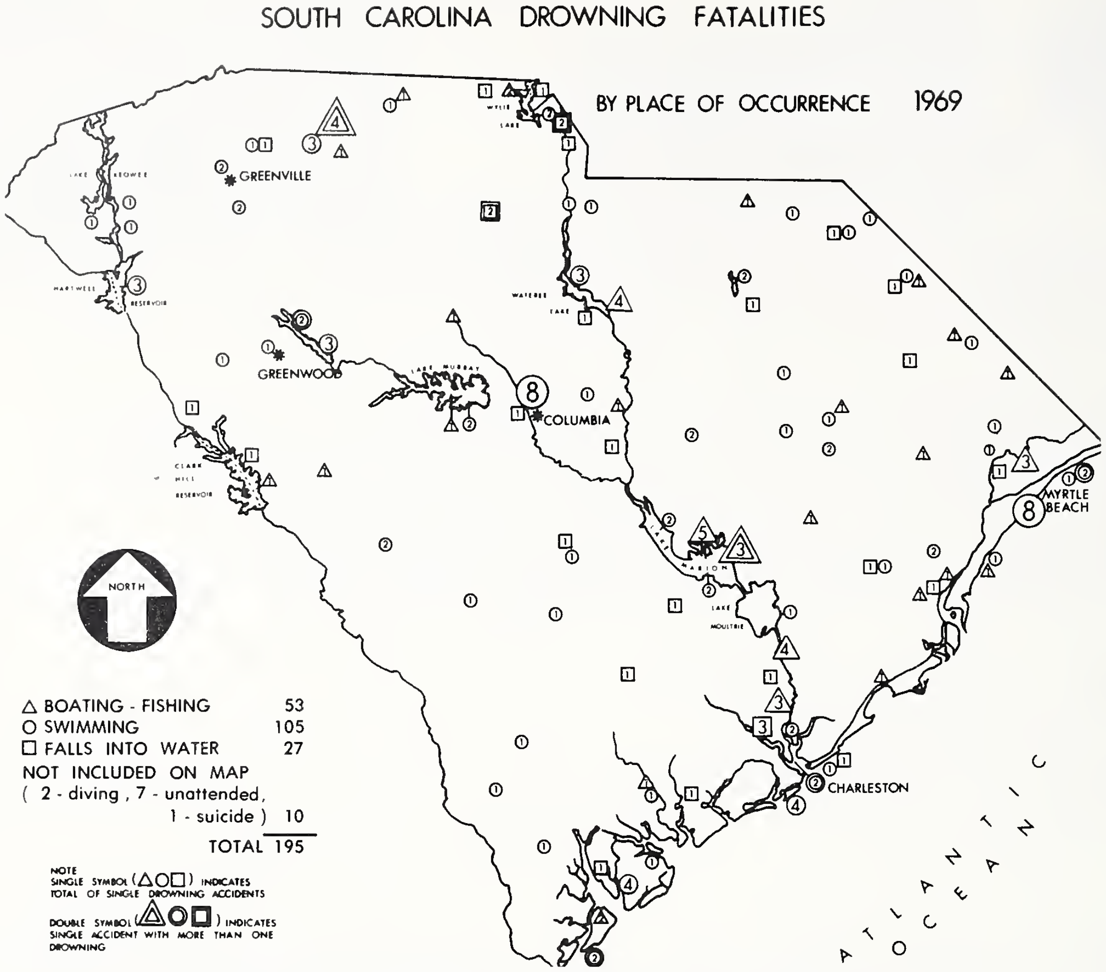
SOUTH CAROLINA DROWNING FATALITIES
BY PLACE OF OCCURRENCE 1969
GREENVILLE
GREENWOOD
COLUMBIA
MYRTLE BEACH
CHARLESTON
ATLANTIC OCEAN
NORTH
△ BOATING - FISHING 53
○ SWIMMING 105
□ FALLS INTO WATER 27
NOT INCLUDED ON MAP
(2 - diving , 7 - unattended,
1 - suicide) 10
TOTAL 195
NOTE
SINGLE SYMBOL (△○□) INDICATES TOTAL OF SINGLE DROWNING ACCIDENTS
DOUBLE SYMBOL (△○□) INDICATES SINGLE ACCIDENT WITH MORE THAN ONE DROWNING

Fig. 1 — Geographic distribution of single and multiple drownings during a typical year, by type of activity.

the largest number of victims which was also reported in a large Australian series.[3] The hours 3:00-7:00 PM claimed 22 victims representing 42 percent of those with a known time on record. By month of occurrence (Figure 5) drownings rise in April, peak in July, decrease somewhat in August and September, but never disappear as a cause of death.

What kinds of activity and circumstances were associated with drowning? As seen in Table 1, most of the victims (39%) were swimming or wading. Twenty-six percent drowned while fishing, and 22 percent had fallen into the water. Which bodies of water accounted for most of the drownings? Sixty-five percent occurred in the rivers and ocean (Table 2). Thirty-two percent of the drownings occurred in creeks, ditches and ponds. One person drowned in a bathtub and one in a swimming pool. Most of the victims who drowned in Charleston County were county residents (76%). Note that eight out of ten victims from out of state drowned in swift rivers or the ocean.

In very few places are alcohol studies performed routinely; decomposition of the body renders analysis unreliable after 48 hours. Two bodies were decomposed beyond testing. Of the 25 tests performed, eight or 32% were positive with blood alcohol levels of .10% (100 mg/dl) or higher. The values ranged from .130% to .257%. One child of preschool age had a positive blood alcohol level; he drowned in the bathtub after having wine with dinner. An undue proportion (50%) of alcohol-positive victims died from falls into the water.

In this series, 34 of the 62 drowned persons were accompanied at the time of the accident, 23 victims were alone, and in five cases this could not be determined. Of those that were accompanied 15 were with one person; 11 were with two persons; six were with three persons; and two were in the company of four or more persons. In three incidents two persons drowned in the same accident. These are especially tragic when, for example, an eight-year-old boy drowned trying to rescue his friend who had stepped into a hole. In over half the cases, mouth-to-mouth resuscitation was attempted. In many instances, companions ran for help when the victim should have been thrown a float or buoyant object.

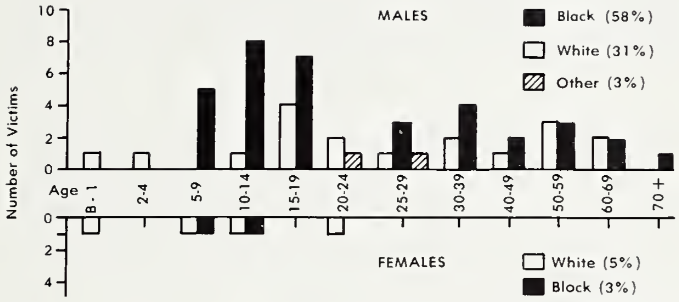

Fig. 2 — Drowning victims in Charleston County, 1973-76, by age, sex and race.

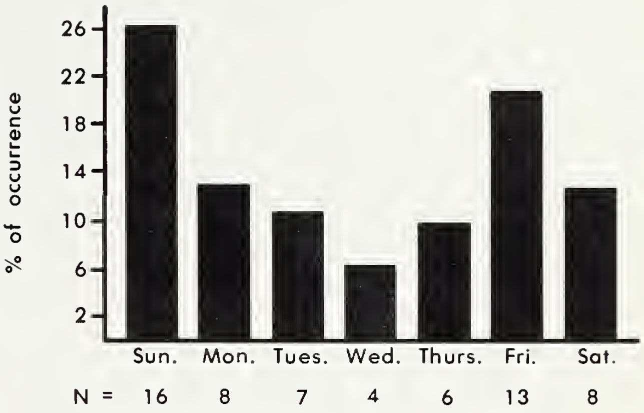

Fig. 3 — Drownings by day of week.

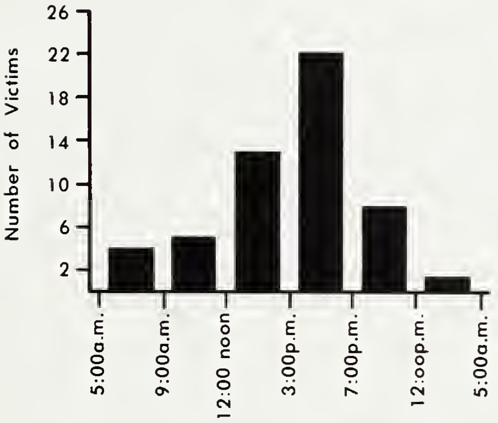

Fig. 4 — Drownings by time of day.

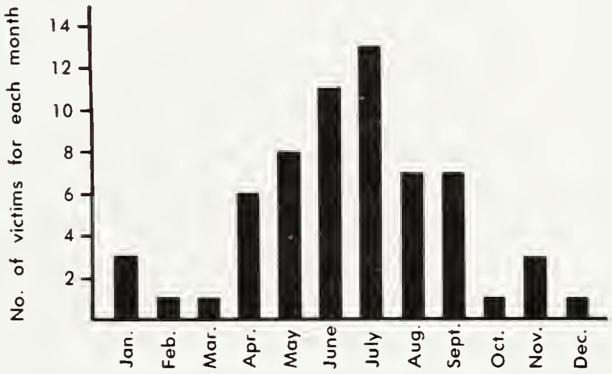

Fig. 5 — Drownings by month of occurrence.

TABLE 1

Activity of 62 Drowned Victims, Charleston County, 1973-1976

Activity	1973	1974	1975	1976*	Total No./%
Swimming	6	6	9	3	24/39
Fishing	5	3	6	2	16/26
Fall	3	3	4	4	14/22
Unattended child	0	1	1	1	3/5
Overturned boat	0	0	1	1	2/3
Suicide	0	0	1	1	2/3
Auto	0	0	0	1	1/2
Total	14	13	22	13*	62/100

* to July 1, 1976

Table 1

TABLE 2

Place of Occurence by Residence of Drowning Victim, Charleston County, 1973-1976

	Place of Residence of Victim		
Place of Occurrence	Charleston County or Adjacent County	Out-of-State	Total No./%
Rivers	20	4	24/39
Ocean	12	4	16/26
Creeks	10	1	11/18
Ditches	5	0	5/8
Ponds	4	0	4/6
Others (pocl, tub)	1	1	2/3
Total No./%	52/84	10/16	62/100

Table 2

Could the state of health have been a contributing factor in the drownings? Fifty-six of the victims appeared to have been healthy at the time of death. Of the remaining five victims two had a history of heart attacks (one of whom fell out of the boat with his attack), one was a schizophrenic with paranoid tendencies, one was epileptic, one was a retarded child, and one was a pregnant suicide victim.

DISCUSSION

A detailed review of 62 drownings in Charleston County (1973-76) provides the opportunity to evaluate multiple epidemiologic factors and causes, and to compare these with a nationwide study. Recently, 5,237 drownings in the United States in 1971 were subjected to systematic review of newspaper accounts and records by the Bureau of Community Environmental Management (HEW). Details on "proximate" (chief) cause and important "contributing" causes were analyzed in over 4,000 cases.[4] The majority of the drownings could be attributed to four major proximate causes: "exhaustion" (21.7%), "swept into deep water" (16.2%), "sinking of support" (10.1%), "trapped or entangled" (5.4%). In addition, two major contributing factors were identified: "overconfidence/overestimation of ability" (31.3%) and "inability to swim" (28.3%). The national study suffers from lack of information on the role of alcohol, especially since Dietz and Baker reported 34% of Baltimore victims to be intoxicated.[5]

Independently, using all the available detail, the authors systematically rated each Charleston drowning as probably "preventable" or probably "not preventable." A sudden illness or change in weather conditions or a peculiar, unlikely set of circumstances were judged "not preventable" (13/57 with sufficient detail = 23%); the remainder (44/57 = 77%) of the victims could have been saved by proper actions on the part of themselves or their companions. This confirms the widely accepted impression that *most* drownings are probably preventable. Risk-taking by overconfident or inexperienced youngsters and by alcohol-impaired adults, as well as appropriate warnings in recreational areas represent target areas for prevention. Children who cannot swim and who cannot rescue their companions tend to drown in ditches, ponds, and other small bodies of water remote from adult supervision or help. Panic in the water, and ignorance of principles of water safety and lifesaving worked together in over half of the cases to seal the fate of the victims.

In a warm climate with abundant opportunities for water recreation, South Carolinians and a growing number of tourists should know and practice water safety. Parents and older siblings have a special obligation to set good examples for children; educators and health professionals are also involved in trying to prevent as many of these tragedies as possible. Hardly anyone who starts the day with water recreation in mind expects to drown, therefore all should heed this warning from the national study:

> ". . . only a small proportion of the millions who swim (wade, boat, or fish, etc.) are skilled enough to care for themselves in all of the situations they are likely to encounter."[4] ☐

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SUBEPENDYMAL ASTROCYTOMA OF THE SEPTUM PELLUCIDUM: CASE REPORT AND BRIEF REVIEW

ROBERT M. CLARK, M.D.*
JULIAN C. ADAMS, M.D.*

The tumor designated as subependymoma by Rubinstein,[1] is described as originating from the subependymal cell layer, probably a variant of ependymoma, and being one of the most benign forms of glial neoplasms. Up until 1968, there were a total of 53 of these tumors reported in the literature, according to Hehmen and colleagues.[2] They were variously termed subependymoma, subependymal astrocytoma, subependymal glomerate astrocytoma, and subependymal mixed glioma. More than 75% of these tumors arose in the fourth ventricle or its recesses. The remainder were divided between the central canal of the spinal cord and the ventricular system. A total of seven subependymal astrocytomas arising from the septum pellucidum have been reported. We report an additional case.

CASE REPORT

The patient was a 57-year-old white male plant manager for a chemical company, who was referred with the chief complaint of difficulty with walking for four or five months, which had gotten progressively worse. This was to the degree that the man had been given a position of much less responsibility at his present employment, due to his inability to function adequately. His wife stated that his posture had been stooped and he had a lag of associated movements in his arms for some few months. He had no visual complaints. He had had occasional mild to moderate headaches. His wife also thought that his memory had been somewhat faulty. On initial neurologic examination, it was felt that his cortical function was normal. The cranial nerves were within normal limits. Motor examination revealed some masking of the facial expression, and a lack of associated movements in his arms. His gait was marked by short steps and appeared to be almost spastic. There was some increased tone in the lower extremities. The upper extremities appeared normal. Finger-to-nose testing and other cerebellar tests were within normal limits. The deep tendon reflexes were brisk, pathologically so, in the lower extremities, but the plantar responses were flexor, and there were no definite pathological reflexes. Initially, the patient was started on Sinemet as it was felt most likely that he had Parkinsonism, although the physician was concerned about the hyper-reflexia. He did not get any response to the Sinemet, and was subsequently admitted to the hospital for further studies. During his hospital stay, he had essentially normal laboratory work-up. X-rays of the skull, brain scan, and EEG were unrevealing. He was seen in consultation by a psychiatrist who felt that he quite possibly was depressed, and started him on anti-depressant medication. Psychological testing revealed that his fund of general knowledge was normal, but his assimilation of learning of new knowledge was much impaired. It was the psychiatrist's impression that he was indeed depressed, but that there were signs of early dementia. Because of the neurologist's concern that a clear diagnosis of this patient's problem had not been accomplished, he had a C.T. scan done. The C.T. scan revealed the below lesion (Figure 1). Following the C.T. scan, the patient was seen in neurosurgical consultation, and admitted to the hospital. He underwent ventriculography in the operating room. The ventriculogram confirmed a mass on the anterior horn of the left lateral ventricle, with no air in the third ventricle. Following the ventriculogram, a left frontal craniotomy was done. The lateral ventricle was entered via a transcortical incision through the superior left frontal gyrus at the region of the coronal suture. Upon entering the ventricle, a grayish, multilobulated mass was visualized. It was arising from the septum pellucidum, just anterior to the foramen of Monro. The mass of the tumor in the left lateral ventricle was approximately 4.5 cm in length, and about 2 cm in diameter. It extended through the foramen of Monro in a dumbbell fashion to fill the third ventricle. After the mass of tumor was removed from the lateral ventricle, the remainder was removed intact from the third ventricle by gentle traction, delivering it through the foramen of Monro. This portion of the tumor was round in shape, and approximately 3 cm in diameter. There were no attachments in the third ventricle. Following this, the ventricular system appeared patent, and there also appeared that there was total removal of the neoplastic tissue. No shunt was done. A red rubber catheter #8 French was left in the right posterior parietal burr hole in the right lateral ventricle as a drain, for 48 hours post-operatively.

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Post-operatively, there were essentially no complications. The ventricular drain was removed in approximately 48 hours after checking intraventricular pressure, which was normal. He remained alert without signs of increased pressure, and discharged ten days post-operatively. His gait and mentation were remarkably improved. A C.T. scan was done on the 9th post-operative day and showed (Figure 2) reduction of the ventricular size and absence of the previous mass lesion. The third ventricle was free of tumor.

When seen in the office two weeks after leaving the hospital, he appeared to be normal mentally and had no motor abnormalities except for some hyper-reflexia in the lower extremeties but was without extensor plantar responses, sustained clonus, but with some mild increased tone. He did not receive radiation therapy. On subsequent follow-up, he still appears to be normal mentally, and his family feels he is back to his normal state, and he has returned to his job. Subsequent psychometric testing revealed normal mental function.

DISCUSSION

Globus and Kuhlenbeck[3] described the subependymal zone or periventricular matrix as a layer of pleural potential cells which is a source of either spongioblastic or neuroplastic cells during development of the nervous system. A remnant of this cell layer persists throughout life, designated as a subependymal cell plate. They described one group of gliomas arising from this subependymal cell plate which are relatively malignant, chiefly ependymomal or choroidal in cell type, and the malignancy is ascribed in part

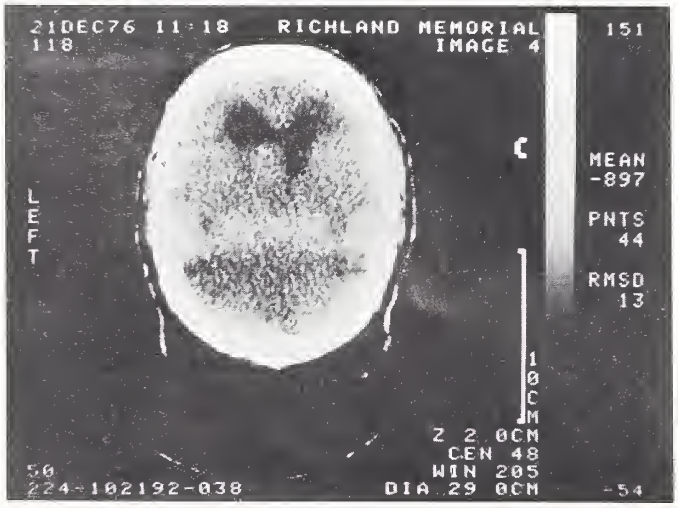

Figure 1

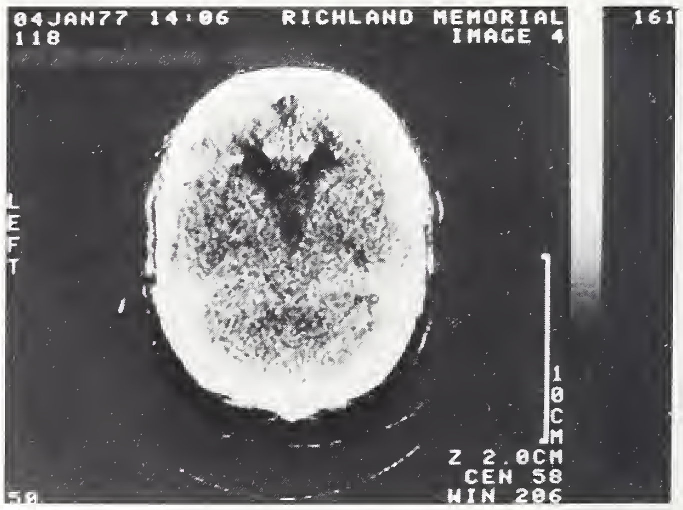

Figure 2

to their original from immature cells. The tumor they termed the spongioblastoma ependymale was histologically characterized by undifferentiated spongioblasts, bipotential mother cells, and occasionally, neuroblasts with much mitotic activity. They considered all of these malignant tumors, with the spongioblastoma ependymale by far the most malignant. Later, the tumor termed subependymoma has been more sharply defined. Boykin[4] reported nine cases of what he termed subependymal glomerate astrocytomas. He felt these tumors were of astrocytic origin, this in contrast to Rubenstein's opinion of ependymal cell origin. Boykin felt these tumors comprised a well-defined histological entity, which was separable from astrocytomas in general, and from other astrocytomas of the ventricular wall in particular. He described a subependymal glomerate astrocytoma as the subependymal tumor that is benign in nature and non-invasive. This tumor was felt to arise from the astrocytes in the subependymal plate. It is composed of mature astrocytes, usually in clusters, thus the term glomerate, and an abundance of glial fibers, and occasional ependymal elements that are present by inclusion. He emphasized these tumors are not invasive and can be totally removed, thereby effecting a cure. The other typical tumor which cannot be macroscopically distinguished, he termed an ependymal granule type of astrocytoma. Histologically, they resemble the moderately cellular astrocytoma of the parenchyma of the brain, and behave in a similar fashion. From the preceding brief review of the literature, one can see that tumors of various histological types occur in the subependymal area, but there is one specific type as a subependymal glomerate astrocytoma, described by Boykin, that would best typify the term subependymal glioma as a true, distinct tumor type with its accompanying clinical implications (Figure 3).

The clinical presentation of tumors of the septum pellucidum deserves brief mention. In French and Bucy's[5] experience, the most common symptom was headache which occurred in all cases. Visual disturbances were less common and usually transitory. Mental deterioration was common and, occasionally, there was unsteadiness of gait, weakness and numbness of the limbs, and seizures. They commented, however, on the remarkable paucity of physical findings of tumors in this location.

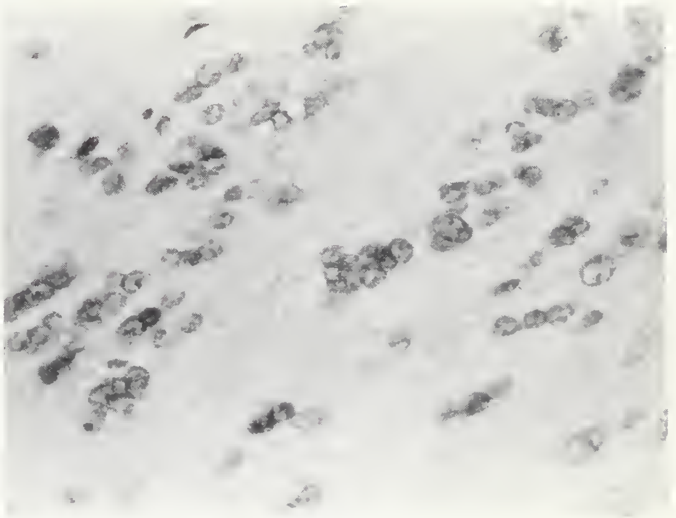

Figure 3

The septum pellucidum lies between and behind the frontal lobes. It is bound on two sides by the corpus collosum and on the third side by the fornix and third ventricle. In close proximity to it, across the lateral ventricles, are the thalami, basal ganglia, internal capsule, and the foramen of Monro are at the base of the septum pellucidum. Therefore, any mass in this location is in a favorable position to interfere with the function of these structures on both sides. There would be no specific findings to indicate a tumor in the septum pellucidum but, in the case presented here, one would expect bilateral motor, pyramidal, extrapyramidal findings and mental changes, either due to the direct pressure on surrounding structures or secondary to hydrocephalus.

The most important aspect of this lesion is that the neurosurgeon be familiar with its existence, its typical location, and, once this lesion is encountered, a vigorous attempt at total removal be done, as it is considered a benign tumor. ☐

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ACKNOWLEDGEMENT

We thank Dr. James Powers, Department of Neuropathology, Medical University of South Carolina, for his consultation.

A CASE OF LEGIONNAIRES' DISEASE IN SOUTH CAROLINA

HENRY M. FARIS, JR., M.D.*

The occurrence of an outbreak of severe pneumonia with 29 fatal cases at the American Legion Convention in Philadelphia in July, 1976 prompted an epidemiological investigation of unprecedented scope. As a result of this investigation there is now a better understanding of the pathogenesis of this disease. A Gram negative, non-acid-fast bacillus has been shown to be the causative organism and more information is being obtained about the bacteriological classification of this organism and its mode of transmission.

Two recent articles and an editorial provide a current summary of our knowledge of Legionnaires' disease, including epidemiological background, clinical pictures, and bacteriological data.[1, 2, 3] In addition to the Philadelphia outbreak sporadic cases of Legionnaires' disease have occurred in at least 29 states. The case below is a documented case of Legionnaires' disease in South Carolina.

CASE REPORT

While driving his automobile on November 8, 1977, a 56 year old caucasian male experienced the sudden onset of shaking chills, fever of 102 degrees, cyanosis, and myalgias of the arms and legs. He had experienced preceding symptoms of rhinitis and nasal congestion for approximately one week and had been taking Dimetapp but had otherwise been in good health. In addition to the acute symptoms he had had a cough productive on at least one occasion of a plug of dark sputum.

The patient is employed as a railway claims clerk. He had not been out of South Carolina in over a year prior to this illness.

On examination respiratory rate was 38 per minute and cardiac rate was 100 per minute with a blood pressure of 160/80. There were a few rhonchi in the left lung base posteriorly and laterally. The remainder of the physical examination was normal.

Oxygen was administered at 8 liters per minute as an office procedure and cyanosis abated. Arterial blood gases after admission to Greenville Memorial Hospital while breathing room air revealed a pH of 7.45, pO2 65, and pCO2 35. Chest x-ray and electrocardiogram were normal and three blood cultures were sterile. Ventilation and perfusion lung scans were normal as were SMA-12 and urinalysis. WBC was 12,500 with a shift to the left. No sputum could be obtained for culture and transtracheal aspiration was not felt to be necessary.

After blood cultures were obtained, erythromycin was begun in a dose of 500 mg. every six hours. This antibiotic was chosen due to the rhonchi heard on examination and the presence of a normal chest x-ray but with an elevated white blood count and left shift suggesting bacterial pulmonary infection. There was rapid improvement with defervescence over the next few hours and he remained afebrile thereafter. There was no further cough, tachypnea, or cyanosis. The patient was discharged in an asymptomatic state November 11, 1977, and was doing well except for mild myalgias of the extremities on December 22, 1977. At that time CBC, SMA-12, and CPK values were all normal. Indirect fluorescent antibody titers were performed by the Center for Disease Control. The November 11, 1977 titer was 1:512 and the December 1, 1977 titer was 1:256.

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DISCUSSION

The incidence of Legionnaires' disease is unknown. In addition to the epidemic of severe pneumonia that occurred in Philadelphia sporadic severe pneumonia and an acute febrile illness without pneumonia may occur.[2] The case described above is an example of the latter form of the disease. Normal chest x-rays were found in only 10% of the patients in the Philadelphia group, most of whom had the pneumonic form of this disease.

Criteria for serologic diagnosis are met by this case. A four-fold indirect fluorescent antibody rise to 1:64 or an isolated titer of 1:128 are diagnostic.[2] Present bacteriological methods do not allow cultural identification of the causative bacteria.

Patients treated with erythromycin or tetracycline have done better than those treated with other antibiotics,[1] although any treatment recommendations are premature.

The recognition of an isolated case of Legionnaires' disease in the acute, febrile, non-pneumonic form in South Carolina should prompt further observations in an attempt to determine the incidence of this disease in its sporadic form. Further bacteriological advances will hopefully allow more prompt diagnosis at local levels and lead to rational antibiotic treatment. ☐

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TYPE IV HYPERLIPOPROTEINEMIA AND ITS RELATION TO ARTERIOSCLEROTIC RISK FACTORS

RAY VAUGHTERS, JR., M.D.*

In dealing with Type IV hyperlipoproteinemia (a normal cholesterol level and a serum triglyceride of over 300 mg. % after a 12 hour fast together with a uniformly cloudy or clear serum after overnight refrigeration), I have found it of interest to analyze my patient population in relation to certain variables. This is an attempt to determine whether the triglyceride level itself is an independent risk factor in the development of early arteriosclerotic disease, or whether triglycerides are coincidentally elevated in the otherwise high risk person, or whether triglycerides work synergistically to increase the danger of other recognized risk factors.

The characteristics that I chose to examine were age, sex, race, presence or absence of proven diabetes mellitus, personality type, presence or absence of overweight, and whether or not the patient was a cigarette smoker. I also analyzed response of the triglyceride level to dietary treatment, as judged by reduction in triglyceride level after weight loss and Type IV diet.

The age range of patients with Type IV hyperlipoproteinemia in my experience was 18-83 years, with a mean age of 44. One patient was under 20, 10 were aged 20-30, 49 were 30-40, 48 aged 40-50, 33 were 50-60, 25 were 60-70, 2 were 70-80, and one was over 80. This does not parallel the age range of my practice population because of the sparcity of patients in the under 30 and over 60 age brackets, where I have a much larger grouping of patients than is present in the distribution of those with hyperlipoproteinemia.

One hundred three of the positive patient population were males; 66 were female. This represents more males than would be expected from my practice population, which is almost evenly divided in regard to sex with a random sampling of patient charts showing 52% female, 48% male.

Racially, 143 of those with Type IV problems were Caucasians and 26 were Negroes. There are proportionately more Caucasians than would be expected from a random sample of my patient population, which is 65% Caucasian and 35% Negro.

Twenty-five of those with Type IV hyperlipoproteinemia were diabetic (as defined by two points on a U.S.P.H. grading scale after a three-hour glucose tolerance test), while 144 had no evidence of diabetes judged on the basis of a normal fasting blood glucose. A random sample of my patient charts revealed that slightly less than 3% are diabetic, so there are more diabetics than sould be expected in the group with Type IV, which has 16% diabetics.

Approximately 20% of my patient population admits to a history of cigarette smoking of at least one pack per day, yet 63 out of 169 with Type IV were smokers. About the same ratio held true for patients with Type A personalities (business executives, those who operate with constant time deadline, etc.) as 42 of the 169 patients with Type IV were considered Type A compared to 90 non-Type A. (This total is less than the total group studied, as several patients could not be classified as either Type A or Type B personalities.)

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The most noteworthy correlation in these studies was with obesity, defined as a weight at least 20% above ideal body weight together with significant fat fold thickness at the waist or under the upper arms. Of those with Type IV 126 were overweight while 43 were not considered obese. This is almost an obverse ratio to my general patient population, 30-35* of whom are overweight.

Finally, response to treatment, defined as a reduction in the triglyceride level (not necessarily to normal) after three months of a Type IV diet* showed 59 with positive response and 23 with no triglyceride reduction. Of the 59 with positive response, 50 had concurrent weight reduction, while of the 23 without response, only four had shown loss of weight. Of most importance from a general practitioner's standpoint is the fact that 87 did not return for follow-up triglyceride determination after at least a six month lapse of time in spite of advice to have the blood rechecked regularly.

In summarizing the findings of patients in a general practice population with Type IV hyperlipoproteinemia, I have found that the patient with this disorder is most likely to be a Caucasian male in his mid-40's who smokes, is overweight, and is more likely than would be expected from a random sampling to have a Type A compulsive personality and diabetes mellitus. The likelihood of the triglyceride level being lowered by weight reduction and Type IV diet is excellent from my experience, but it is necessary to reinforce the importance of repeat visits to determine follow-up triglyceride levels, for a large percentage of patients do not view it as important enough to warrant return visits for recheck. The importance of the triglyceride level as a direct cause of the development of arteriosclerosis is not known at present. This study could not allow any definite conclusions to be drawn in this regard, but it did show that elevated triglycerides is not independent of other known or suspected risk factors such as obesity, smoking, personality type, race, sex, and diabetes mellitus. Other studies could possibly further define variables covered in this study so that the direct or synergistic effect of triglycerides in the development of arteriosclerosis can be appreciated. □

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* Instructions for the diet are found in the U. S. Department of Health, Education, and Welfare booklet entitled "For Dietary Management of Endogenous Hyperglyceridemia — Type IV Hyperlipoproteinemia."

THE UNIVERSITY OF SOUTH CAROLINA SCHOOL OF MEDICINE: A PROGRESS REPORT FROM THE DEAN

RODERICK MACDONALD, M.D.*

A little over a year ago, Charles Bryan, M.D., editorialized in these pages on the need of the University of South Carolina School of Medicine for a clear declaration of mission and goals. The School's administration and faculty also recognized the need for a clear statement of purpose. Because of this an official mission and goals statement was approved by the University's Board of Trustees at its June, 1977, meeting.

The opening paragraph of this document, which is printed in full in the School of Medicine Catalog, declares that "the School of Medicine of the University of South Carolina was established to improve the health of the people of the State of South Carolina through medical education, research, and the delivery of health care." Now that the Charter Class of the School of Medicine has completed its first year and the School is looking forward to the matriculation of the second class, we would like to report on progress in accomplishing these threefold goals of education, research, and service.

The School of Medicine formally began its primary mission of educating physicians for the State of South Carolina with the matriculation of the Charter Class on August 29, 1977. In order to develop knowledgeable and compassionate physicians, the curriculum stresses the integration of clinical and basic science training, and the students have now begun intensive work in a wide spectrum of medical disciplines, including Anatomy, Biochemistry, Physiology, Behavioral Science, Clinical Medicine, and Clinical Preventive Medicine.

The past year has also witnessed substantial growth in School of Medicine faculty numbers, with an increase from 95 total faculty on June 30, 1977, to 186 total faculty on June 1, 1978 (these totals include volunteer faculty and staff physicians at affiliated hospitals).

During this same time period, three new academic departments have been established. Dr. C. Warren Derrick assumed the chairmanship of the Department of Pediatrics on November 1, 1977, and recruitment of Pediatrics faculty has progressed rapidly.

On February 1, 1978, Pharmacology (previously administered as a part of a combined Department of Physiology and Pharmacology) assumed full departmental status under the chairmanship of Dr. Donald O. Allen, who has served as Coordinator for Pharmacology since 1975. Recruitment of additional faculty is now underway in this department.

Finally, Dr. M. Michael Sigel assumed the chairmanship of the new Department of Microbiology and Immunology on April 1, 1978, and is actively developing faculty and programs in this department.

Further, the Department of Surgery, which has been under the direction of Dr. George H. Bunch as Acting Chairman since June, 1977, will have a permanent Chairman about August 1, 1978. The newly appointed Chairman of the Department of Surgery is Dr. Carl H. Almond, a distinguished thoracic and cardiovascular surgeon who comes to South Carolina from a position at the University of Missouri School of Medicine.

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A Medical Student Affairs Office has also been established to coordinate a broad range of student services, including housing and financial aid. With regard to financial aid, the School of Medicine is receiving significant and welcome support from the citizens of South Carolina. Three medical scholarship funds have been established, two by individuals and one by a business firm. Also, a sizable estate which was earmarked for scholarships for USC School of Medicine students is in litigation, with good prospects of a favorable settlement. In addition, two memorial gifts have been received, one in support of a teaching chair and one in the form of a general fund in support of medical education.

As mentioned previously, the matriculation of the second class of medical students will take place on August 28, 1978. Admissions for the 1978-79 entering class were opened on May 1, 1977, and 706 applications were received. The School of Medicine was visited by representatives of its accrediting body, the American Medical Association-Association of American Medical Colleges Liaison Committee on Medical Education, in late November, and at that time a request was made to increase class size. We are extremely gratified to report here that the LCME has acted favorably on this request, authorizing the University of South Carolina School of Medicine to admit a class of thirty-six in the fall of 1978, a fifty per cent increase in entering class size.

Research and health care delivery are the necessary complements of medical education. Research is stressed, as the nurture of intellectual curiosity in students and faculty contributes to the development of new knowledge and the practical application of that new knowledge in improving health care. With these benefits in mind, the School of Medicine is building a well funded research effort. Faculty research grants active since July 1, 1976, total $700,857, and research grants totaling $398,505 are currently active (these totals include the Biochemistry Section). Current projects encompass a number of areas of investigation, including cancer chemotherapy and myocardial infarction, which should ultimately directly benefit the health of the state's citizens.

Of most immediate impact on the health of the state's citizens are the School's contributions to health care delivery on a campus, community, and statewide level. The School of Medicine was given a unique opportunity to improve the health of those closest to home, the students of the University, with University President Holderman's mandate to the School to assume the direction of the University's Thomson Student Health Center in December, 1977. The Student Health Center became part of the School of Medicine's Department of Family Medicine, under the chairmanship of Dr. J. Robert Hewson, who also serves as Director of the Richland Memorial Hospital Family Practice Center. In assuming responsibility for the Student Health Center, the Department's mission is to improve the availability and quality of student health care and provide facilities for the care of student dependents, who are eligible for treatment, on a preferential basis, at the Family Practice Center.

The School of Medicine also strives to improve health care delivery on a community and statewide level. Faculty members serve on the staffs of affiliated hospitals (the Columbia Veterans Administration Hospital, Richland Memorial Hospital, and the William S. Hall Psychiatric Institute) and are involved in the operation of outpatient clinics at these hospitals. For example, School of Medicine faculty members are heavily involved in the activities of the Richland Memorial Hospital Family Practice Clinic and Outpatient Clinics in Obstetrics and Gynecology, and both clinics have approximately doubled patient services within the past two years. In addition, School of Medicine faculty members are available as consultants on a statewide basis.

At the request of the University President, the Dean has also assumed the chairmanship of a Committee of Deans of the University's Health Science Colleges. The mission of this committee is to develop coordinated programs of education and patient health care services. Joint participation in a multiphasic health screening program in a selected area of the state is under consideration.

Faculty members also contribute their services as advisors to various health-related charitable organizations and serve on a number of statewide health committees. For example, the Associate Dean for Medical Services has been named chairman of the new State Task Force on Fetal Alcohol Syndrome, and another faculty member serves on the Core Committee of the State Diabetes Task Force.

Ground was broken on December 7, 1977, for the new 50,000 square foot School of Medicine Library to be located at the VA Hospital Campus. Until the completion of this new facility in the spring of 1979, the Medical Library is occupying quarters in Petigru College on the University's Main Campus. Medical Library holdings have now increased to a total of over 21,000 volumes, with 1100 subscriptions and an audiovisual collection of approximately 300 units. To augment the MEDLARS data bases which have been available since March, 1977, the Library has added a range of data bases, including CHEMICAL CONDENSATES, BIOSIS PREVIEWS (BIOLOGICAL ABSTRACTS), AND PSYCHOLOGICAL ABSTRACTS. In addition, the Columbia Area Union List of Medical Periodicals has been expanded to a State List, with 6,000 listings.

The School is particularly proud of the Library's rapid development and the breadth of services it offers and believes that it is an excellent example of the ways in which the threefold purposes of education, research, and health care delivery complement each other. Not only is the Medical Library a resource for students in their course work and for faculty in their teaching and research, but it is also a significant community and state resource. The rapid advancement of medical knowledge mandates continued professional growth if a physician is to continue to practice medicine at full potential. To serve this need, the full services of the School of Medicine Library, including MEDLINE and other data base searches and audiovisual materials, have been available to Columbia area health practitioners since the Library's inception. In addition, a formal division of the State into two areas, one to be serviced by the USC School of Medicine Library and the other to be serviced by the Medical University of South Carolina Library, has now been approved and will be effective approximately September 1, 1978. Under this plan, health care practitioners from nineteen South Carolina counties, including the cities of Spartanburg and Orangeburg in addition to Columbia, will be eligible to utilize the USC Medical Library's full services.

All of us who are associated with the University of South Carolina School of Medicine are pleased with the School's rapid development. Accompanying this report are two tables detailing development of faculty and physical facilities. Future red letter days in the history of the School of Medicine will be the relocation of basic science departments to the VA Hospital Campus (scheduled for the summer of 1981) and the graduation of the Charter Class in June, 1981.

We would like to thank the South Carolina Medical Association for giving us the opportunity to report to the physicians of South Carolina through the medium of its journal and express the hope that we may be allowed to continue these periodic reports during these historic early years of the School of Medicine of the University of South Carolina. □

TABLE I

USC SCHOOL OF MEDICINE

FACULTY DEVELOPMENT

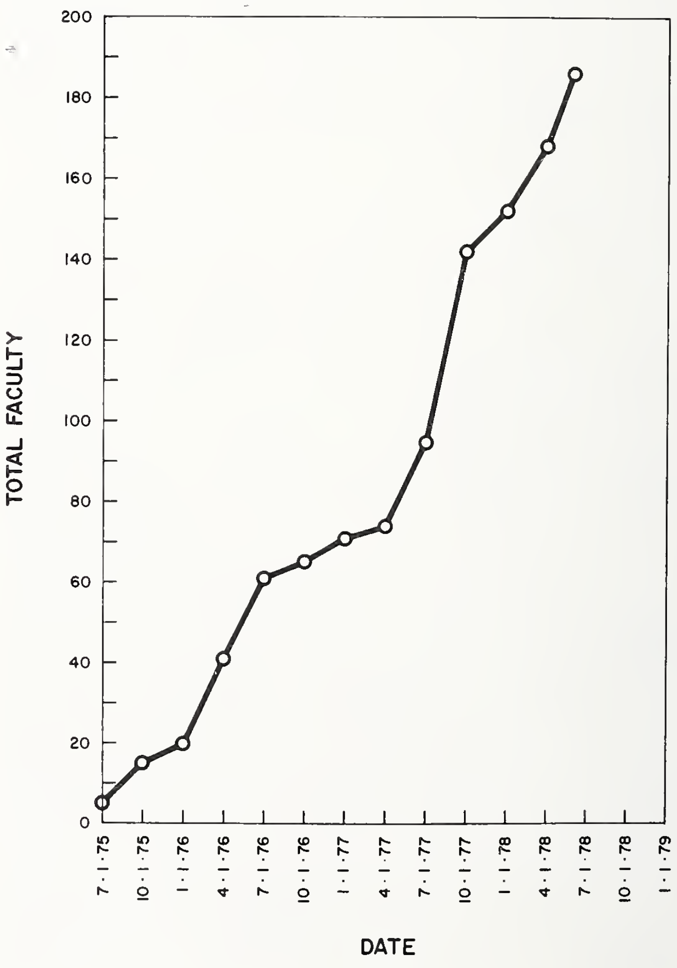

TABLE 2

UNIVERSITY OF SOUTH CAROLINA SCHOOL OF MEDICINE
DEVELOPMENT OF PHYSICAL FACILITIES

Department	Current Location	Future Location	Date of Move
Dean's Office	Petigru College, Main Campus	VA Campus	Summer, 1980
Medical Library	Petigru College, Main Campus	VA Campus	Spring, 1979
Anatomy	Medical Sciences Bldg., Main Campus	VA Campus	Summer, 1981
Biochemistry	Physical Sciences Cntr., Main Campus	VA Campus	Summer, 1981
Family Medicine	Richland Memorial Hospital	Richland Memorial Hospital	
Medicine	VA Hospital, Richland Memorial Hospital	VA Hospital, Richland Memorial Hospital	
Microbiology and Immunology	Coker Life Sciences Bldg., Main Campus	VA Campus	Summer, 1981
Neuropsychiatry and Behavioral Science	Wm. S. Hall Psychiatric Inst., VA Hospital	Wm. S. Hall Psychiatric Inst., VA Hospital	
Obstetrics and Gynecology	Richland Memorial Hospital	Richland Memorial Hospital	
Pathology	Booker T. Washington Cntr., Main Campus; VA Hospital	Booker T. Washington Cntr., Main Campus; VA Hospital	
Pediatrics	Richland Memorial Hospital	Richland Memorial Hospital	
Pharmacology	Medical Sciences Bldg., Main Campus	VA Campus	Summer, 1981
Physiology	Medical Sciences Bldg., Main Campus	VA Campus	Summer, 1981
Preventive Medicine and Public Health	Physical Sciences Cntr., Main Campus	VA Campus, Main Campus	Summer, 1981
Surgery	Richland Memorial Hospital, VA Hospital	Richland Memorial Hospital, VA Hospital	

SECOND CONFERENCE ON EMOTIONAL STRESS SCHEDULED

The Second National Conference on Emotional Stress and Heart Disease is scheduled for October 13-15, at the Hyatt on Hilton Head Island. Sponsored by the American Heart Association, South Carolina Affiliate, the International Stress Foundation and the Monsour Medical Foundation, the meeting is the second of its kind organized by the Task Force on Emotional Stress and Heart Disease of the South Carolina Heart Association. The purpose of the conference is to provide an update on the information published in the February, 1976 Proceedings of the National Conference on Emotional Stress and Heart Disease, Supplement to the *Journal of the South Carolina Medical Association.*

Keynote speaker at the conference is Hans Selye, M.D., Ph.D., D.Sc., an Austro-Hungarian born physician and medical researcher, known for his famous and revolutionary concept of stress. Dr. Selye has made other notable contributions to medicine through his studies on cardiovascular and kidney diseases, calciphylaxis and aging, steroid anesthesia and stress hormones.

Also at the three-day conference will be such noted physicians and speakers as Robert S. Eliot, M.D., Professor of Medicine and Director of the Cardiovascular Center, University of Nebraska Medical Center, Omaha, Nebraska; and Ray Roseman, M.D., Associate Chief, Department of Medicine and Association Director of the Harold Brunn Institute for Cardiovascular Research, Mount Zion Hospital and Medical Center, San Francisco, California.

To obtain more information about the Second National Conference on Emotional Stress and Heart Disease, contact Grady H. Hendrix, M.D., Course Director, American Heart Association, South Carolina Affiliate, P. O. Box 6604, Columbia, S. C. 29260.

Editorials

Elsewhere in this issue, Roderick Macdonald, M.D., dean of the University of South Carolina School of Medicine, outlines the new school's progress. Of great interest to practitioners and academicians alike is the relationship between medical schools and teaching hospitals. Mr. Hardy Wickwar, consultant to Richland Memorial Hospital (a community hospital which will be a vital element to the new medical school), recently traveled to Europe and studied firsthand the relationship between schools and hospitals there. We know of few published observations of this kind, and his editorial, below, is therefore quite relevant to our setting.

— CSB

MEDICAL SCHOOLS AND TEACHING HOSPITALS

At least since Boerhaave took his students to the Leyden Sickhouse some 250 years ago, it has been recognized that medical education differs from education for all other liberal professions by reason of its greater need for use of a congregate service institution: the hospital. In North America, this relationship has taken a variety of forms. At one extreme is the Harvard/McGill model, where a university medical school has entered into cooperative agreements with self-standing community hospitals. At the other extreme is what might be called the Charleston model, where the medical teaching institution has owned and operated its own hospital since 1955. And North America knows many shades of difference between these two extremes.

Knowing, therefore, that a wide range of options would be open to South Carolina in developing its new USC medical school, I have seized every opportunity since 1974 to see how this relationship is evolving among our highly developed and respected friends in Western Europe.

In Britain the situation is plain and clear. Each Area Health Authority appoints the professional staff in its hospitals, appoints their house staff, meets such accreditation criteria as nationwide professional specialty boards may impose, and, if it has additional expenses arising from use of one of its hospitals for clinical teaching of medical undergraduates, receives a "plussage" grant channeled to it from the national Treasury's University Grants Committee. In short, the Area Health Authorities are completely and entirely responsible for all professional as well as administrative aspects of the teaching hospitals, subject only to the working out of reciprocity arrangements with the medical schools in their area. In those famous London instances where it was the hospital that started the medical school, service and education have been severed administratively since 1974. In those other famous London instances of the University College and Kings College medical schools, it may be added that the medical school is not responsible even for teaching basic science to undergraduates, which the University Grants Committee likes to see handled as an interdisciplinary college responsibility.

In the "hospital/university centers" developed in France since 1958, the situation is as clear, with municipal teaching hospitals appointing both senior and assistant professional staff and providing graduate training, in parallel partnership with state medical schools.

The Netherlands formerly placed the teaching hospital and the medical school under the same university governing board; but the teaching hospitals have been separated since 1970 from the universities and placed under their own boards. At the historic 1,100-bed Academic Sickhouse at Leyden, the house staff is appointed partly by hospital, partly by the university. The teaching hospital covers half of its heavy expenses from earnings, but half from a grant from the State department of education.

In Italy, the regional, provincial and municipal governments cooperate in developing the teaching hospital, while the national government provides the university and its medical school. The two bodies then negotiate working arrangements. At the time-honored 3,000-bed Civic Hospital at Padua, for example, the hospital appoints the professional staff in all such major clinical fields as general surgery and medicine, while the medical school provides staff in less frequented subspecialties such as neurosurgery and ophthalmology.

In Germany, universities and major hospitals do not have governing bodies or corporate identity of their own, but are subdivisions of the same government department, of which all their professional and administrative staffs are civil servants. In a teaching hospital, however, such as Munich's new 1,600-bed Klinikum, the professional staff is charged to the university chapter of that government department's budget, so that its cost does not have to be included in the flat-rate that the hospital charges its patients or their insurance funds. This has produced an impression of medical school control over the teaching hospital, whereas in reality both are and have long been instruments of a single state government department headed by the member of the state cabinet responsible for education, health and religion, who is known for short as the Kultusminister. In each branch of clinical education and service, State policy as well as professional interest has made the ambulatory diagnostic center as important as inpatient beds, and as much used by family physicians for referral of patients from all income levels.

In all of these West European countries, with the possible exception of Germany, there is thus a marked current trend towards "separate but equal" status for teaching hospital and medical school. In moving in this same general direction with its new USC medical school, South Carolina is thus in good company.

Hardy Wickwar
Professor Emeritus of
Political Science,
University of South
Carolina, and
Consultant in Planning
and Development,
Richland Memorial Hospital

THE NEW EDITORIAL BOARD

Featured on the masthead this month are the members of the new editorial board of *The Journal*. Establishment of an editorial board was strongly recommended by the AMA survey team in 1977, and was endorsed at the 1978 SCMA convention. Members of the new board include representatives from private practice, from the Medical University of South Carolina, from the University of South Carolina School of Medicine, and from the Waring Library Society. The board also welcomes the participation of our distinguished editor emeritus.

The concept of an editorial board for *The Journal* is not new. In retrospect, *The Journal* always had an editorial board — until sometime during the long editorial tenure of the late Dr. Joseph I. Waring, during which the functions of the board apparently declined and the board itself eventually disbanded. Men of Dr. Waring's energy and organizational ability are rare. We believe that the new board will strengthen our periodical.

The re-establishment of an editorial board provides an opportune time to review briefly the history and purpose of *The Journal*.

In 1900, SCMA president Dr. W. Peyre Porcher told members at the annual meeting that the absence of a state medical journal in South Carolina was "a standing opprobrium to our profession." He urged:

> "Let the Transactions of this Association be a nucleus around which the medical history of this State can be published . . . Let all members be urged to subscribe and to contribute towards it before all other journals, and let the support of the journal be guaranteed by this Association . . . Let a Board of Counsellors and a corps of editors be appointed to write, revise and supervise the conduct of the journal . . . Let us no longer bear the stigma of leaving no record of our deeds, but let our works live after us, and let our names be handed down to our children and our children's children, so

> that we may be known in the land which the Lord our God has given us."[1]

In 1905, Porcher's dream became reality. The editorial board stressed, in the first issue, "upon every man the importance of contributing his share."[2]

Review of old volumes of *The Journal* suggests that for half a century most articles were written by practicing physicians. In the past two decades, in parallel with the growth of medical faculties has been a trend for most manuscripts to originate from medical school campuses. Nevertheless, a major purpose for *The Journal* is the provision of a place for practicing physicians to publish their observations and to express their opinions.

We feel that this purpose is realized, for instance, in the present issue. Original scientific articles include two timely case reports, and an analysis of data obtained in the private practice of a family practitioner. An editorial, below, reflects the thoughts of a practitioner upon a problem in contemporary American life.

We continue to welcome such contributions by private physicians. We are concerned that the increasing cost and sophistication of scientific research has inhibited the potential for self-expression by practitioners. Every physician makes occasional observations worthy of publication, and such observations can stimulate investigators in medical centers to better utilization of their resources.[3]

Finally, we suggest that *The Journal* should reflect some of the *fun* of medicine — an element notably diminished in many of our periodicals.

Few articles today reflect, for instance, the enthusiasm found in a 1935 article entitled, simply, "Some Interesting Case Reports."[4] Noting that "these cases are submitted for their novelty, rather than scientific interest," the author first described "a bit of humanity lying in the arms of his father, in appearance more simian than human, more dead than alive," and made the diagnosis of appendiceal abscess in a newborn child. "Six years after the operation," he concluded, "William was the largest boy I have ever seen for his years." The second case describes a course of action when the supply of anesthetic agents was exhausted midway through a laparotomy: "Requisition was quickly made upon motor cars and ether-gasoline switch made and operation completed satisfactory to us." Finally, a lithopedian complicated by apparent anaerobic pelvic infection with "the vilest odor that ever saluted any one's olfactories" was described. Happily, "not long since I saw the whole family in a cornfield pulling fodder and a happier family I have not seen."

Many factors now inhibit such exuberant self-expression. Despite these restraints, we feel the continued need for a journal *by and for* private practitioners. We do not hold the illusion that the future historian will look to state medical journals to unravel the story of who conquered the mysteries of cancer or atherosclerosis. But, to paraphrase the remarks made by Dr. Porcher at the turn of the century, *let our journal reflect the climate of our times, as experienced here and now by our state's practitioners.*

— CSB

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An early case of Legionnaires' Disease in South Carolina is reported in this issue of The Journal. *In the guest editorial below, Dr. Richard Rose provides up-to-date information, some of which is derived from unpublished material.*

— CSB

LEGIONNAIRES' DISEASE: AN UPDATE

Shakespeare said, "There are more things in heaven and earth than are dreamt of in your philosophy,"[1] and he was right — nature still has more secrets than we have knowledge. This point was emphasized by the Philadelphia epidemic of two years ago that put a new term in our vocabulary and a new disease in the differential diagnosis of pneumonia — Legionnaires' disease. After appearing dramatically on the scene, Legionnaires' disease still has not yielded all its secrets, but its armor has been pierced and some of the answers have been found.

To put the disease and what is known about it in perspective, it is necessary to review its history as we know it. On August 2, 1976, it became known that an epidemic of respiratory disease was affecting people who had attended an American Legion convention in Philadelphia in late July. Local, state and federal officials aided by the medical community, city police, and the American Legion began to investigate the problem. Within three days, over 25 Epidemic Intelligence Service officers and other personnel from the Center For Disease Control (CDC) were in Pennsylvania assisting in the investigation. The investigation utilized sophisticated modern technology and old fashioned hard work — portable computer terminals for data analysis and shoe leather worn thin finding the cases and their contacts. The clinical disease was described; 182 patients were found, 29 of whom died.[2] The investigation associated the outbreak with a certain hotel and showed that transmission was probably airborne with no evidence of person-to-person or secondary spread. However, extensive laboratory testing yielded no evidence of infection with known pathogens and no evidence of a toxic etiology. Even the most unlikely possibilities were ruled out.

Six months after the outbreak there came a breakthrough — at CDC a previously unknown bacterium was isolated from lung specimens obtained from several fatal cases. Further work identified it as a non-acid-fast, gram-negative rod. This bacterium was used to develop an indirect fluorescent antibody (IFA) assay. Using this test, evidence of recent infection with the agent was found in 91% (101/111) of suitably timed specimens from outbreak-associated cases. Extensive testing revealed that this organism is not a previously described pathogen.[3]

The IFA has proved a valuable tool in elucidating the epidemiology of Legionnaires' disease. It implicated Legionnaires' disease as the cause of two previously unsolved outbreaks, one in 1965 in Washington, D.C.,[4] the other in 1968 in Pontiac, Michigan.[5] Since 1977, the IFA has been used to diagnose over 250 sporadic cases in the United States and to study small outbreaks which have occurred in Ohio, Vermont, Tennessee, Indiana, Scotland, England, and probably Spain. In 1977, two South Carolinians with severe pneumonia were shown to have high titres ($\geqslant$1:512) against the Legionnaires' agent — one of these cases in this month's issue of the *Journal*. Diagnosis of both of these cases was based on single high titres of antibody against the Legionnaires' agent. Given the clinical picture presented by both patients and their response to therapy, the diagnosis of Legionnaires' disease is appropriate in both cases.[3] However, recent data has shown that high titres against the Legionnaires' agent may persist for up to 12 years after illness and that titres as high as 1:1024 can be found among asymptomatic people with no evidence or history of disease.[6] The only warning in this is that, to be meaningful, the laboratory results must be interpreted in light of the patients' disease. Whenever possible, patients suspected of having Legionnaires' disease should have an acute serum drawn during illness and a convalescent serum drawn at least 21 days later. A fourfold rise in antibody titre between the acute and convalescent specimens confirms the diagnosis.

Continued work at CDC has produced a guinea pig model of Legionnaires' disease that has allowed testing of antibiotic efficacy.[7] Erythromycin is successful in treating the disease in this model and is recommended for the treatment of Legionnaires' disease.[8]

What, then do we know about Legionnaires' disease? It is caused by a previously unrecognized gram-negative rod; it occurs sporadically and in epidemic form; it is probably worldwide in distribution; there is growing evidence that erythromycin is the drug of choice in its treatment; and it really isn't a new disease at all — just one we had not identified as a specific entity, one we had "not dreamt of in (our) philosophy."

Many questions remain to be answered. Exactly what is this bacterium that remained hidden for so long? What is the natural reservoir of Legionnaires' disease? How is the disease spread? With persistence and good fortune the answers to these questions will be found.

Richard C. Rose, III, M.D.
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Columbia, S. C. 29201

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ERRATUM

An important erratum occured in the article, "Coronary Heart Disease and Stroke Death in South Carolina: Geographic Differences," which appeared in the April, 1978 issue of *The Journal*. A credit line for Figure 2 was omitted and should have read as follows: "This print was used with the permission of Professor Hubert I. Sauer. The enigma of the Southeast in *Trace Substances in Environmental Health-IX*. D. D. Hemphill, Ed. University of Missouri, 1975."

AUXILIARY PAGE

1978 CONVENTION

Every Convention has a certain amount of fanfare, social times, business sessions and reporting. The Fifty-Fifth Annual Convention of the American Medical Association Auxiliary, Inc. was true to form. To expound on all activities would be impossible, so I would like to share with you some events that would be of interest to you.

The meeting was called to order Monday, June 19, by the President, Mrs. Chester L. Young of Kansas. South Carolina had a full quota of delegates and alternates. Nellie Claire Brown of Rock Hill was the Presidential Delegate, along with Marge Adams of Columbia, Elise Cain of Dillon, Nancy Hawk of Charleston and myself. Alternates were Lib Peoples of Estill, Tennie Crowford of Lancaster and Jennie Tanner of Columbia.

On Tuesday morning, the State Auxiliaries from the Southern Region each gave a brief report on one interesting project within their state. Elise Cain reported for South Carolina, telling of a project from Charleston County Medical Auxiliary. This project consisted of a well-informed committee, speaking to over 30 clubs in Charleston on the topic, "Is There a Malpractice Crisis?" Tapes were made on the subject and are available. If you are interested in hearing and using one of these tapes, contact the SCMA office in Columbia.

During the opening of the AMA House of Delegates, Mrs. Young presented the AMA Auxiliary check for $1,577,372.53 for AMA-ERF. Of this amount, the Southern Region contributed $303,922.04. South Carolina contributed a little over $20,000, for which we were very proud.

The AMA Auxiliary, through the state and local auxiliaries, will continue to sponsor health programs. We will continue promoting the immunization campaign. Hop-Scotch immunization stencils for school sidewalks and play grounds, and newly designed posters will be used. If you don't have a Medical Auxiliary in your County, and are interested in this program, contact Mrs. Maxie McCoy, 105 Lowood Lane, Greenville, S. C. 29605.

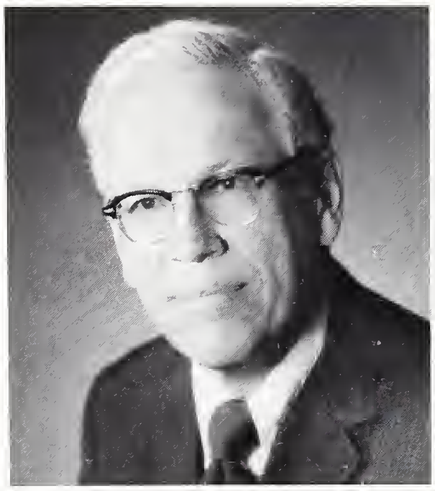
AMA Auxiliary By-laws were amended to include a new classification of membership for spouses of interns, residents and medical students. Information and material in the form of a newsletter called "Vision" will be sent quarterly to Young Physicians' Spouses at medical schools and hospitals throughout the nation. Did you know that interns, residents and fellows may join S.C.M.A. for $15.00 per year dues? We would like to encourage them to join you, and for the spouses to join S.C.M.A. Auxiliary.

The installation of Officers of the AMA Auxiliary was held Wednesday, June 21. Mrs. Manuel A. Bergnes of Pennsylvania was installed as President for 1978-1979. I felt very honored to be installed as a Director on the AMA Auxiliary Board of Directors. This is a first for South Carolina. I also will be serving on two committees, The Committee on Young Physicians' Spouses and The Long Range Planning Committee. I will strive to serve to the best of my ability, and in so doing, hope to bring honor and pride to our State.

Mrs. Bergnes, in her Inaugural address, stated "As the auxiliary to the American Medical Association, and to our state and local medical associations, we support two things — the ideals of the private practice of medicine and the ideals of the voluntary effort. We cannot separate the auxiliary and the AMA, and we cannot support one without supporting the other. When we pledge ourselves to uphold the auxiliary, we also pledge ourselves to support the medical profession." We, the members of the state auxiliary, have pledged ourselves to uphold the auxiliary, and in so doing have pledged to support the South Carolina Medical Association. Call on us for our voluntary efforts.

Billie Brady (Mrs. Wayne C.)

President's Pages



SECOND CONSULTATIONS

> "Nothing in this title shall be construed to authorize any Federal officer or employee to exercise any supervision or control over the practice of medicine, or the manner in which medical services are provided. . . ." — Section 1801, P. L. 89-97 (Medicare Law).

> "If we have learned one thing in our experience with Medicare and Medicaid, it is that the Government cannot limit its role in financing health care simply to paying bills." — HEW Secretary Joseph A. Califano, Jr.

The Califano quotation serves as the preface to the Forum on "Second Consultations" recently prepared by the Health Care Financing Administration of the HEW, and soon to be part of a massive publicity campaign to get Medicare and/or Medicaid patients to seek "second opinions" before surgery. With bureaucratic arrogance, the prohibition clearly stated in Section 1801 is blandly ignored.

The Public Affairs material distributed June 30, 1978 by Mrs. Virginia M. Smythe, Regional Administrator of the HCFA, includes not only a forum format, but also a suggested article for medical magazines, another article in question/answer form for Senior Citizens' magazines, and radio and television scripts. By the time this President's Page is printed, the campaign may already be in full swing.

Although the program is touted to be "part of the Department's efforts to expand the knowledge of the patient, and to improve the quality of health care," it is patently clear that the real emphasis is on anticipated cost saving by encouraging patients to avoid surgery.

The cost effectiveness of the program is in doubt, however, as described in the *Medical Tribune's* article of May 10, headed "Second Opinion Savings Go Up in Blue Smoke," with a secondary head, "Surgery Data Lacking: Did Blue Cross Fake its 'Second Opinion' Savings?"

The government will pay 80 percent of the "reasonable" cost of Medicare consultations, and in many states the full cost for Medicaid patients. Among the options to be offered patients will be to contact their local Social Security district office or their local Welfare office or telephone a toll free number to learn the referral source nearest to them. This agency will necessarily be required to try to develop a list of physicians in various specialties who have agreed to serve as consultants for this "second opinion" program. The patient may contact the consultant and get another opinion either with or *without* the knowledge of his/her original physician.

The "second opinion" program as now promulgated would be "voluntary," but it should be recognized that this may be the first step toward eventual *mandatory* consultation.

Physicians in the state will probably soon be contacted by such an agency acting for HEW and will be asked to agree to serve as consultants. Before agreeing to having his name listed as a consultant under this program, each South Carolina physician would be well-advised to study carefully the official positions of the AMA and the SCMA:

At the recent Annual Meeting, the AMA House of Delegates reaffirmed the following policy statement:

> "Recognizing that the advisability of surgery or other specific therapy can be a matter of opinion, the House of Delegates of the American Medical Association (1) reaffirms the right of a patient or a physician to seek consultation freely with any consultant of his/her choice; (2) opposes the concept of mandatory consultation when required by a third party payor; (3) supports the concept that when consultation is required by a third party payor, the consultation should be at no cost to the patient; (4) opposes the concept of closed panels of consultants; and (5) supports the concept that if consultation is required by a third party payor, the patient should be allowed to choose a physician of his/her choice."

The SCMA Council, on May 28, 1978, adopted the position that the South Carolina Medical Association supports the concept of patients being able to seek second opinions in surgical cases when it might be beneficial to the patient's well-being. However, the South Carolina Medical Association opposes the panel concept

(1) because second opinions can now be readily obtained through existing mechanisms;

(2) because of the potential legal problems which would be created by the use of a second opinion panel; and

(3) because of the potential confusion which could be created in the mind of a patient by the patient's individually seeking second and sometimes third opinions without the guidance of the attending physician.

In my opinion, the "second opinion" program of the HCFA is full of pitfalls. My advice to South Carolina physicians in regard to accepting listing as consultants is to avoid it like the plague.

John C. Hawk, Jr., M.D.
President

A REVIEW

THE ASSAULT ON THE FAMILY

Franklin Delano Roosevelt once said, "Whenever you see something unusual and unexpected occur in the realm of politics or economics, don't think it just happened; we planned it that way." "The Assault on the Family" is a succinct and informative article by James M. Parsons, a practicing psychiatrist who has long been interested in the study of subversive activities directed against our young people, and therefore against the future of so-called western civilization. In this article he confirms the fact that there is indeed such an attack in existence, and identifies its nature, the persons involved, and their motives.

The family has always been the basic unit of human organization, and has been recognized, protected, and venerated as such by civilizations except the communist civilizations of Russia and China, where it is under attack. The Anglican Book of Common Prayer refers to "God who setteth the solitary in families." It has always been understood that it is the duty of fathers to be prepared to die in the defense of their families, and of their father-lands as an extension of the family. Parents left their worldly goods to their descendants. Karl Marx recognized both the spiritual and physical nature of families, and attacked both, advocating "community of women," and abolition of private property. The purpose of Karl Marx, simply put, was to destroy western civilization; church, state, and economy, in order to build the communist state upon the resulting chaos.

People do not ordinarily equate socialism with communism (although the name of Russia is officially the Union of Soviet Socialist Republics), or humanism with socialism. We must learn to do so.

Dr. Parsons identifies the movement which has attacked the American family as "a secular religion, called Humanism." He states further, "As a religion, Humanism demands the end of all religions that are God-oriented, and the abolition of profit-motivated society so that a world utopian state may be established which will dictate the distribution of the means of life for everyone." This pregnant sentence carries the concept of Humanism as a religion, and an anti-God religion; as an economic movement to destroy the free enterprise system; and as a government which will own and control the means of production and the distribution of the product. Try that on for size.

It is very helpful to have listed leading activists in the Humanist movement; to wit, Ti-Grace Atkinson, Lester Kirkendall, Karen DeCrow, Toni Carabillo, Corliss Lamont, the American Humanist Association, the Unitarian-Universalist Church, Ashley Montagu, Elysium, Inc., and its publication "Ankh," Esalen Institute, National Organization for Women (NOW), Planned Parenthood-World Population, SIECUS, the Society for Human Abortions, *et al.* Dr. Parsons shows that the Feminist movement is *ipso facto* an attack upon the family, because women must be liberated from slavery as mothers rearing children in their homes.

Dr. Parsons points out the basic dishonesty of the Humanist movement. He cites for example the use of "code words" (Aesopian language), which mean one thing to the Humanists, and another thing to the rest of us; a practice long employed by the communists, and exemplified by communist use of the word "peace." To non-communists, peace between nations implies not only absence of armed hostilities, but normal trade relations, with exchange of goods and services and international travel. To the communists, peace means the absence of resistance to communist goals.

The Humanists are pushing so-called "sex education" in the government schools. You and I would ordinarily suppose that this meant a simple explanation of the anatomy involved, of the changes that take place at puberty, of the essential facts dealing with reproduction, information about venereal disease, and very little else, the course to be given once in junior high school. These subjects could be covered adequately in a very few lessons. The Humanist concept differs from this. First of all, it involves instruction in every grade from kindergarten to college, with classes that last for weeks or maybe all year. Anatomical details are gone into explicitly, and the thrust of the courses is mechanical, with omission of any reference to the spiritual aspects of sex, and the obligations involved in legitimate sex, which is, of course, marital sex. Lenin's classical remark was, "Sex is like a drink of water. When you are thirsty, you take a drink."

Dr. Parsons points out that there is a "period of sexual latency from about age five till puberty, when the normal child represses sexual thoughts, while the business of personal idealism, identification with significant adults, and studies in school proceeds. This allows for orderly formation of character, because the child's repression of sexual matters serves the purpose of developing self-control---. That which interferes with the latency period interferes with the learning process, with discipline and self-control in school, and disrupts family life at home." Emphasis upon sexual matters from kindergarten to college is like forcing a potted plant; the end product is unhealthy and abnormal. A child so treated will be disruptive not only of his parents' home, but of his own home in the future.

Humanists naturally believe in and teach Darwinian evolutionary theory. It must be pointed out that Darwin's ideas were indeed "theory," and never proven fact; and that Darwin himself abandoned them before he died. Scientifically speaking, it requires as much faith to accept the theory of evolution as to accept the Biblical version of creation.

Dr. Parsons shows further that the Humanist attack is of long-standing, is world-wide in scope, and has practically destroyed the Swedish nation which now has, in addition to sex without surcease, the highest suicide rate in the Western world, and the economic stagnation of socialism.

The fascinating pamphlet is available from PRO Publishers, Lock Drawer 1569, Melbourne, Florida 32901 for $2.00. It is well worth the money and is highly recommended.

Thomas Parker, M.D.
123 Sumner Street
Greenville, S. C. 29601

MEDICAL MEETINGS

A symposium on Diabetes Mellitus entitled "Background and Guidelines for Management," is scheduled for September 28, 1978 in the Richland Memorial Hospital auditorium in Columbia, South Carolina. Sponsored by Pfizer Laboratories and the USC School of Medicine, the symposium offers six AMA Category I credit hours. Additional information may be obtained from Howard Nankin, M.D., at the VA Enclave in Columbia (803) 776-6572.

* * * *

The first International Congress on Cardiovascular Surgery and Diseases will hold a joint meeting with the American Society of Contemporary Medicine and Surgery at Caesar's Palace in Las Vegas, January 14-19, 1979. Participants may receive up to 40 hours of CME credit in Category I. For information, write Rutledge Howard, M.D., 6 N. Michigan Avenue, Chicago, Illinois 60626.

* * * *

Mark your calendars for the 1978 Mid-Winter Meeting of the SCMA House of Delegates, to be held at the Hyatt on Hilton Head Island November 3-5, 1978.

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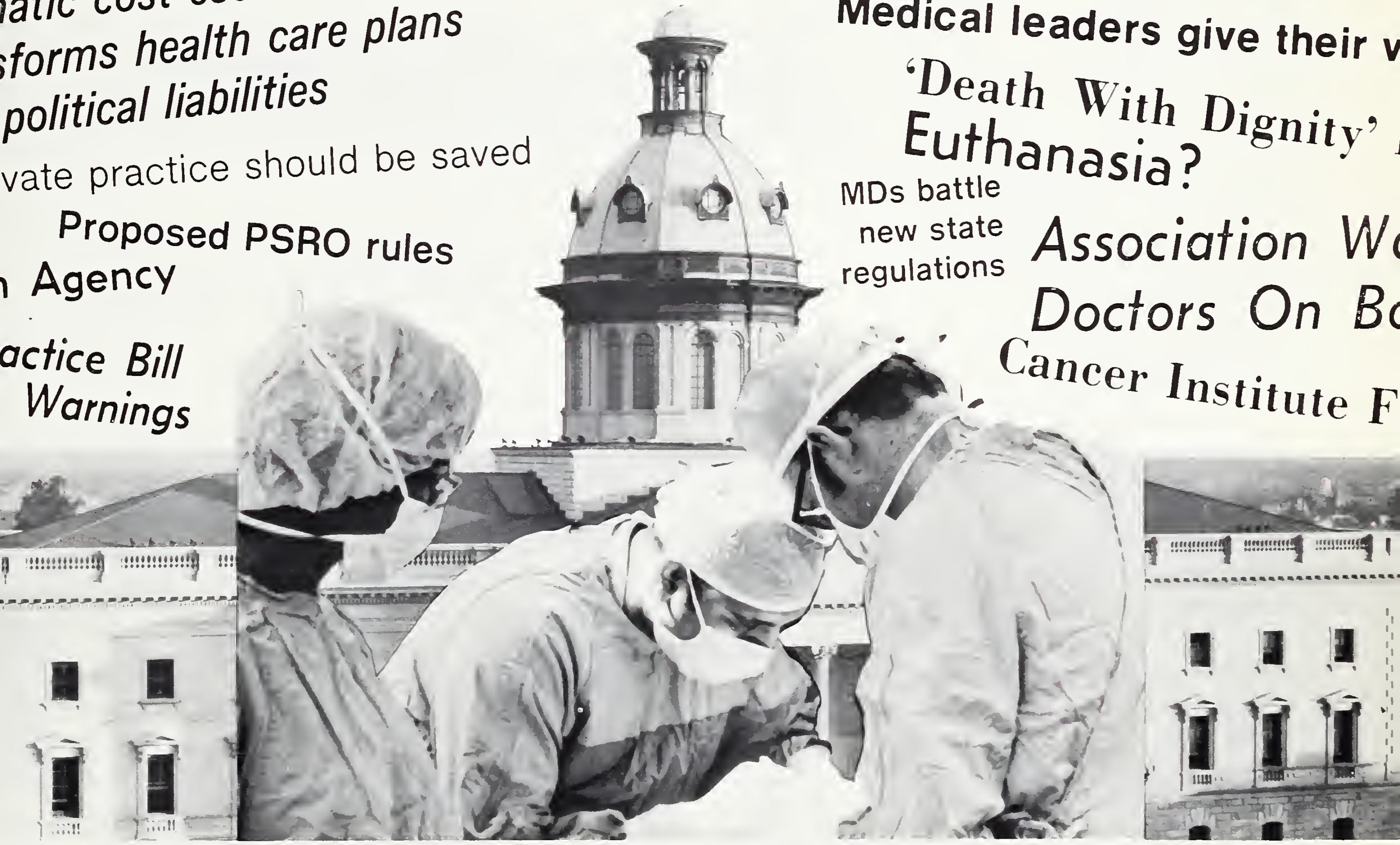

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VOLUME 74 SEPTEMBER 1978 NUMBER 9

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Application to mail at controlled circulation rates is pending at Columbia, SC.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

INFORMATION FOR AUTHORS

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We request that manuscripts be concise (no longer than 8 typewritten pages, double-spaced), with no more than ten references. These should be cited in the text in superscript, e.g., "Kaunitz and Lindenbaum[3]", and should conform to the following style: "3. Kaunitz JD, Lindenbaum J: The bioavailability of folic acid added to wine. Ann Intern Med 87: 542-545, 1977." Ordinarily, publication of four small illustrations or tables or the equivalent will be paid for by *The Journal*. Manuscripts should be submitted in duplicate. Reprints will be made available by the publisher.

THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 SEPTEMBER 1978 NUMBER 9

CLINICAL MANIFESTATIONS OF PHENCYCLIDINE INTOXICATION[*]

HARRY H. WRIGHT, M.D., MBA[**]
GLORIA B. GREEN, M.D.[***]

The increasing number of patients being admitted to psychiatric facilities as "refractory cases of acute schizophrenia" but who in reality are suffering from phencyclidine intoxication is cause for great concern by health care providers. Patients with undiagnosed phencyclidine intoxication have frequently received unnecessary and, too often, harmful medications. When such patients fail to respond to the usual treatment for acute schizophrenia, larger doses of neuroleptics or even polypharmacy have been used in futile attempts to control symptoms. Such measures not only aggravate the symptoms of phencyclidine intoxication but are likely to produce complicated side effects associated with the use of neuroleptic medication.

It is hoped that this paper will create an awareness of the clinical manifestation of phencyclidine intoxication. Its purpose is to underscore the importance of securing a complete drug history and a close evaluation of clinical findings in all cases that present as acute schizophrenic psychosis.

HISTORY

Phencyclidine first appeared as a street drug in 1967 on the streets of San Francisco where it was sold as Pea Ce Pill (or PCP). Because of unpleasant effects, this drug developed a bad reputation on the street and essentially disappeared within a year. In the last several years, phencyclidine has reappeared on the scene and is in widespread use all across the country. A recent study reports that phencyclidine was the most frequently used drug in 1,000 cases of drug intoxication.[1]

On the street, phencyclidine is known by many names including PCP, Angel Dust, Hog, Crystal, Crystal Joint, CJ, Peace Weed, Supergrass, Superweed, Rocket Fuel, Sheets, Cadillac and Elephant Tranquilizer. It often appears in combination with other chemicals and frequently masquerades as something completely different (most commonly as THC, the active component of marijuana).

Phencyclidine was synthesized over 20 years ago and was investigated as a surgical anesthetic agent in the mid 1950's. Although it is an effective anesthesia, due to the side effects, its legal use has been limited to veterinary medicine since 1967. Phencyclidine, 1-(1-Phencyclohexyl) piperidine, (Sernyl, Sernylan) is a white crystalline powder which is readily soluble in water and ethanol.

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It has been suggested that the reappearance of phencyclidine as an illicit drug is partially due to its masquerading properties, low cost, ease of production, and high profits.[2] The production of a pound of phencyclidine requires about $75 of raw chemicals and can bring in excess of $20,000 from street sale.[3] Three hundred million dollars worth of phencyclidine was recently confiscated in the raid of an illegal California lab.

CLINICAL MANIFESTATIONS

The drug may be taken by mouth, smoking (inhalation), snorting (insufflation), and parenterally (IM or IV). There are numerous physiological findings with phencyclidine intake.

Physiological changes with low dose intake include tachycardia, hypertension, and increased deep tendon reflexes. Dizziness, ataxia, nystagmus, and dysarthria are also commonly seen. Sweating, flushing, drooling and pupillary constriction can be observed in some patients. When large doses are taken, coma and convulsions are possible manifestations.[3, 4, 5, 6]

The psychological effects have been compared to behavioral changes seen in prolonged sensory deprivation. There is an inability to process sensory information which gives rise to secondary deficits of reality-testing ability and emotional stability. Symptoms commonly observed are anxiety/agitation, body image distortion, disordered thought process and repetitive motor behavior.[3, 4, 5, 6]

Recently, there have been attempts to classify the clinical manifestations of phencyclidine intoxication.[4] This drug differs from other psychoactive drugs in that it can produce symptoms ranging from a drunken euphoria to an extremely agitated violent behavioral state. The chronic effects of phencyclidine have not been extensively described.

Those on low doses of phencyclidine (1-5 mg) usually experience a "floaty" uninhibited state often associated with feelings of numbness. Emotional lability is commonly observed. The motor behavior may be uninhibited but speech usually remains coherent. These individuals seldom seek medical attention.

With increased doses (5-10 mg) a confused, excited state is observed. Although these users often present with a "blank stare" and are quiet and withdrawn, this behavior may quickly change to combative violent behavior. Body concerns are common and impairment of sensory processing and verbal communication are frequent. Gross ataxia, rigidity, nystagmus, motor restlessness, and repetitive movements are seen. This group of intoxicated persons is usually brought to the emergency room by police or friends because they are unresponsive or because of bizarre and violent behavior.

After moderate or high doses (10 mg or greater) a number of clinical pictures have been observed.[4, 5, 7, 8] Individuals may present with an acute toxic psychosis often indistinguishable from an acute schizophrenic episode. In some cases this psychosis becomes apparent several days after the drug intake. The symptoms commonly observed include stupor, unresponsive catatonic states and bizarre or violent behavior.

When phencyclidine intoxication presents as a stuporous catatonia, manifestations include mutism, repetitive movements of extremities or the whole body, posturing, and social withdrawal. Psychomotor agitation, incoherent or flighty speech and unpredictable aggressive behavior characterize the individual presenting with an excited catatonia. A typical manic syndrome has been described in two patients.[9] Phencyclidine intoxication may also present as a typical paranoid psychosis with auditory hallucinations, depersonalization and ideas of reference with suspicious content.[7]

With extremely high doses (up to 1,000 mg have been reported), prolonged comatose states or death may result.[4]

The period between drug intake and admission to the hospital in an acute phencyclidine psychosis is often characterized by hyperactivity, insomnia, and intermittent aggressive behavior. Recurrent psychotic episodes frequently occur with prolonged use of phencyclidine even after the drug has been discontinued. The chronic user of phencyclidine often comes to the emergency room with concerns about brain damage, depression, anxiety or a paranoid psychosis.[10]

CLINICAL MANAGEMENT

The management of phencyclidine intoxication requires an understanding of the drug's pharmacology and its dose-related clinical manifestations. Phencyclidine is metabolized by the liver. Because the drug is also excreted unchanged by the kidney, hydration is important in acute intoxications.[5] Hypertension frequently occurs with phencyclidine intake and treatment might be required in severe cases. Blood pressure can be lowered with diazoxide (Hyperstat).[6] Diazepam is useful in treating myoclonus and seizures and is usually helpful in calming agitated patients.[5, 10]

Most low-dose intoxications can be managed with sensory isolation and diazepam. Placing the patient in a dimly lit, quiet room has been the most successful approach.[3] In contrast to the management of most hallucinogenics (e.g. LSD), "talk down" or other verbal and physical stimulation may excite the phencyclidine patient and cause an exacerbation of symptoms.[5, 7, 10] Phenothiazines are contraindicated in the acute phencyclidine intoxications when a confusional state is associated with hypertension.[10] However, chlorpromazine has been used following resolution of the initial confusional state in cases where a psychosis persisted for several days or weeks.[7]

Patients presenting with stupor or coma require additional measures. Since large amounts of phencyclidine have been recovered from the stomach in acute oral intoxication, gastric lavage is indicated in these cases. Nasopharyngeal suction is recommended to help in decreasing the possibility of aspiration. Intubation is often difficult because of increased muscle tone.[10]

Recovery from acute intoxication of phencyclidine usually occurs within 24-48 hours. Acutely toxic patients are dangerous to themselves and to others because they misinterpret sensory data and have a tendency to display extremely unpredictable and violent behavior.[7] Suicide has been reported in the "come down" (6-24 hour) period after phencyclidine intake.[10]

In some patients a prolonged psychosis requires hospitalization from 4-6 weeks.[7, 8] This psychosis is characterized by periods of agitation, panic, hyperactivity, and gross paranoia alternating with quiet, cooperative periods. These patients appear to be no longer hypersensitive to stimuli but do remain psychotic, paranoid and unpredictable.[7]

Chlorpromazine[7] and haloperidol[8] have been used to ameliorate this psychosis. Generally there is rapid reintegration after 10-14 days. There is often amnesia for early events of phencyclidine intoxication.[7] The patients are usually tapered off of medication either before discharge from the hospital or later in outpatient follow-up.

SUMMARY

The widespread use of this drug makes it extremely important for health care providers (especially primary care physicians) to be aware of the clinical manifestations of phencyclidine intoxications. Management of low dose intoxication usually involves sensory isolation and diazepam, but higher dose intoxication frequently requires prolonged hospitalization. It is important to remember that most of the phencyclidine related deaths have resulted from behavioral changes induced by the drug rather than from the drug *per se*.

The suspicion of phencyclidine intoxication should increase when an acutely excited patient presents with ataxia and nystagmus and when a stuporous or comatose patient presents with hypertension and increased deep tendon reflexes. ☐

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COGNITIVE CHANGES FOLLOWING SURGICAL INTERVENTION FOR A SUBCLAVIAN STEAL SYNDROME

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Evidence for postulating intellectual and neuropsychological gains following cerebral revascularization has been demonstrated.[1, 2, 3] The data for such reports have been generated from patients with operable carotid artery disease, most specifically carotid artery stenosis due to arteriosclerosis. The purpose of this report is to present post-operative changes in intellectual abilities in a patient with classic subclavian steal syndrome.

CASE REPORT

A 45-year-old male presented with vertigo. In addition, he had experienced several episodes of momentary loss of consciousness accompanied by visual blindness during the previous year. These episodes did not extend beyond 10 to 15 seconds but were of increasing frequency. He reported episodes of 7 to 9 hour total amnesia during which time his actions were appropriate but he had no recall of events or persons involved. He experienced two episodes of right sided hemiparesis that cleared in 10 to 15 minutes. He was treated with bland diet for a peptic ulcer in 1958. He had no gastrointestinal or genitourinary symptoms at the time of admission. He reported no cardiac or pulmonary difficulties. He has been hypothyroid for eight years and at the time of our evaluation was taking two grains thyroxine per day and also clofibrate for control of type IV hyperlipoproteinemia. He has experienced vertigo associated with hypoplycemic episodes. Due to progressive symptomology he was admitted to Self Memorial Hospital for complete evaluation to include arch arteriography in December, 1976.

On physical examination, he appeared as a well developed, alert, somewhat hyperactive male in no acute distress. Cardiovascular examination revealed normal sinus rhythm with no murmur or gross cardiomegaly. The point of maximum impulse was at the anterior axillary line. He had no abdominal scars, his liver and spleen were not palpable and bowel sounds were normal. On peripheral vascular examination, he had markedly decreased pulses in the left upper extremity, with right brachial arterial pressure of 140/80 and left brachial arterial pressure of 100/80. A bruit was heard over the left subclavian artery. A harsh grade ¾ systolic bruit was heard over the right carotid artery. The abdominal aorta was not aneurysmal. Femoral and pedal pulses were of good quality. A left ankle deformity from a previous fracture was noted.

Laboratory values included: calcium 10.6 mg/dl; blood sugar 93 mg/dl; VDRL was nonreactive; hemoglobin 14.3 grams/dl with a hematocrit of 40%; creatinine 1.0 mg/dl; EKG normal; thyroid profile normal; cholesterol was 285 mg/dl; triglyceride 115 mg/dl; and chest x-ray was normal.

An arch arteriogram showed a small notch deformity involving the right innominate artery consistent with a small atherosclerotic plaque. This produced slight narrowing of the innominate artery. The right subclavian artery was well visualized into the axillary area with no point of narrowing. The right common carotid artery showed a normal take off with a small plaque formation at the distal end of the common carotid artery, beneath the origin of the internal carotid artery. No atheromatous lesions were noted in the right internal carotid artery (figure 1).

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On the left, a small notch deformity was noted in the left internal carotid artery 2 cm. above its origin with minimal narrowing (figure 2). No left subclavian artery or left vertebral artery was demonstrated on the early films but a large right vertebral artery was seen. On delayed films, a classic subclavian steal syndrome was demonstrated with good visualization of the left vertebral artery which supplied the blood to the left subclavian. The left subclavian artery was small, but no definite atherosclerotic changes were seen. The length of the blockage of the original left subclavian artery was approximately 2.5 cm. (figure 3).

In January, 1977, the saphenous vein removed from the patient's right lower extremity was prepared as an autogenous vein bypass by irrigation with a heparinized saline solution and complete ligature of all branches. An end to side saphenous vein subclavian bypass was created right to left, utilizing 5-0 Prolene on the anastomosis. An operative arteriogram showed normal blood flow to the distal arm with reinstitution of arterial pulse. There was no asymmetry of brachial arterial pressure. There were no postoperative complications and the patient was discharged on the fourth postoperative day.

To assess the effects of surgical intervention on intellectual functioning, the patient was administered the Wechsler Adult Intelligence Scale (WAIS)[4] preoperatively in January, 1977, and postoperatively in March, 1977.

As shown in Table 1, there was a marked increase in verbal, performance, and full scale intellectual functioning as measured by the WAIS. Such change goes well beyond that expected from practice effect alone. More relevant is the patient's academic performance. Due to the patient's initial symptomology, he was retired from his occupation as an air traffic controller. Prior to the onset of gross physical symptoms, he was

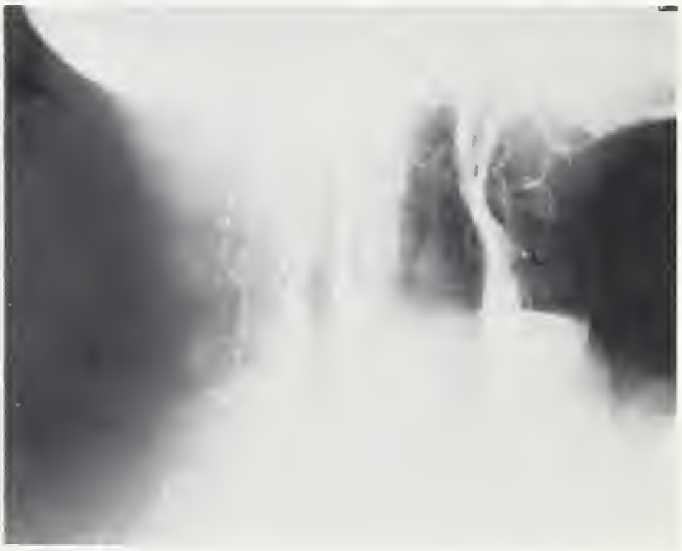

FIGURE 2. Arch arteriogram showing notch deformity of the left internal carotid artery.

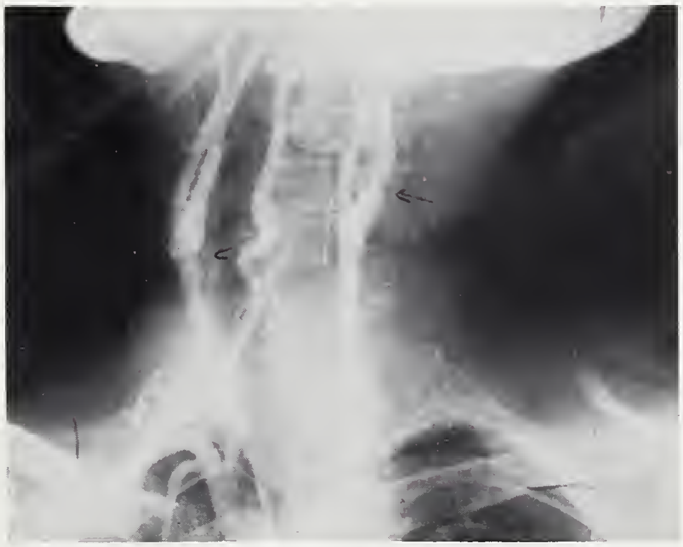

FIGURE 1. Arch arteriogram showing notch deformity in the right innominate artery and plaque formation in the right common carotid artery.

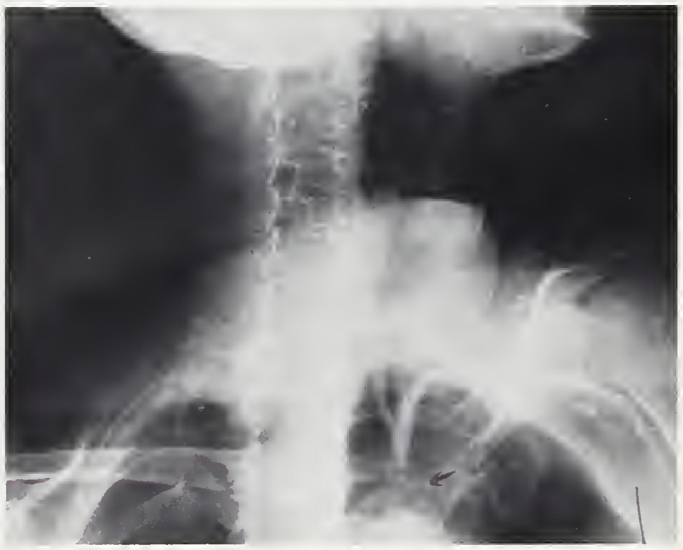

FIGURE 3. Delayed film demonstrating subclavian steal syndrome with blockage of the left subclavian artery.

enrolled in a vocational-technical college where he maintained a 2.85 grade point average. Following surgical intervention, he maintained a 3.5 grade point average and completed his training program.

DISCUSSION

The ability to achieve intellectual, neuropsychological, and/or functional gains following surgical improvement of cerebral blood flow warrants further investigation. Such an investigation should employ a standardized measure of intellect, a comprehensive battery of neuropsychological measures, and a control population. Analysis of data should include subgroups based upon severity and laterality of stenosis.

The control population will serve to discern specific practice effects associated with the test-retest phenomenon. Neuropsychological protocols should receive "blind" interpretation, meaning that the interpreter has at his disposal the patient's age, educational level, and the data generated from the test battery. A specific rating scale based upon neuropsychological functioning that would indicate degree and locus of impairment should be employed.

A comprehensive study of this nature may serve to delineate specific gains from cerebral revascularization and serve as a basis for effective counseling and aftercare of the patient.

SUMMARY

A patient with a classical subclavian steal syndrome was administered a standardized intellectual measure on a pre- and postoperative basis. Marked improvements in intellectual assessment and academic functions were noted following revascularization. □

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ACKNOWLEDGEMENT

The neuropsychological service was made possible by grants from the South Carolina Department of Mental Retardation and the Self Foundation.

TABLE 1: Preoperative and Postoperative Functioning on the Wechsler Adult Intelligence Scale

	Preoperative Assessment	Postoperative Assessment	Change
VERBAL IQ	114	123	9
PERFORMANCE IQ	100	123	23
FULL SCALE IQ	108	125	13
Scale Scores			
Information	12	13	1
Comprehension	13	15	2
Arithmetic	14	13	-1
Digit Span	10	14	4
Similarities	10	12	2
Vocabulary	13	15	2
Digit Symbol	10	12	2
Picture Completion	10	12	2
Block Design	10	14	4
Picture Arrangement	6	9	3
Object Assembly	5	12	7

SOUTH CAROLINA PHYSICIAN POPULATION, 1965 THROUGH 1975: A STATISTICAL STUDY*

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The quality, availability, and utilization of health care systems is important to the general population. Frequent evaluation of these systems is vital to those responsible for providing adequate health care delivery. South Carolina and other states are currently investigating their present and future medical care needs and resources. In 1971, the Smith Committee in South Carolina was assigned to probe the mix of medical specialists, the age and location distributions of state physicians, and the retention of graduates from the state's medical school.[1] In 1973, further investigations of the state's health care and educational resources were reported by another Smith Committee[2] and in two reports to the Governor concerning medical education and the provision of health services.[3, 4] The aforementioned studies have been cross-sectional.

However, viewed over several years, it is possible for a population to exhibit significant trends which might go unnoticed in a cross-sectional study. This is especially true when the processes affecting the population of interest express themselves over a prolonged period. Thus the authors believe that although statewide physician data describing individual years are useful, data describing trends would permit the behavior of a state's physician population to be monitored and compared more effectively to the nation as a whole and to other states, and be of more value in planning for present and future needs.

In 1971, a national retrospective study[5] was performed. One of the more interesting results was that South Carolina retained an unusually high percentage (60 per cent) of its medical school graduates. This time-dependent statistic is one frequently sought by those in the medical education decision-making process. It is also widely accepted that the national trend toward physician specialization and away from general practice has continued at a rapid rate.

In addition to the retention rate and specialization trend, other facets of the physician population, such as age, geographical distribution and mobility, have been of interest. To assess and keep abreast of the changes in the characteristics of a state's physician population, a data base, retrieval system, and statistical procedures must be available. Therefore, the objectives of this study were to: i) establish an ongoing, permanent South Carolina physician population data base; ii) adapt statistical procedures applicable to the study of such a population; and iii) assess the state's present status and the magnitude and nature of any significant time related trends within the physician population.

DESCRIPTION OF DATA BASE AND METHODS OF ANALYSIS

To establish a data base, information on the South Carolina physician population was taken from South Carolina physician directories (1965-1975)[6] and computer-stored using the capabilities of Multi-purpose Information Processor.[7] The following information on each physician was extracted for inclusion in the record: county of practice, year of birth, medical school and year of graduation, type of practice, license number, and year of directory.

Physicians' names and addresses were nonessential to the statistics of interest. The year 1965 was selected as the initial year because interns and residents were first distinguished from practicing physicians in that directory. Physicians, residents, and interns with permanent licenses were included in the data base. The population described in this paper excludes Federal and retired physicians although they were included in the file.

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After entry into the computer-based system, each record was modified to include state health service area (HSA), specialty grouping, medical school location, and age.

The forty-six counties were grouped according to the state's five health service areas determined by the Bureau of Health Planning and Resources Development. Each HSA includes from one to fourteen counties as shown in Table 1. HSA 5, which straddles the South Carolina-Georgia border, includes only one South Carolina county. Types of practice were categorized using the four American Medical Association groupings: general practice, medical specialties, surgical specialties, and other specialties as shown in Table 2. These groups encompass all physicians (including interns and residents) except administrators and Federal physicians.

The medical school location groupings were based on the four national regions used by the United States Bureau of the Census[8] as shown in Figure 1. A fifth group was added to include medical schools not located in the United States.

Profiles of the physician population for 1965, 1970, and 1975, and statistics describing the changes among those years are presented and discussed. Each year's population is partitioned according to age, health service area, specialty grouping, and medical school location. Trends with regard to the aforementioned stratifications are discussed.

The losses and gains among the years 1965, 1970, 1975 for the South Carolina physician population were assessed to determine changes by medical school location. For example, those physicians present in 1965 and absent in 1975 were considered the loss for 1975 (denoted as "1965-1975 loss"); those present in 1975 and absent in 1965, the gain for 1975 (denoted as "1965-1975 gain").

Table 1. South Carolina's Health Service Areas by County

Health Service Area	Counties Included
1	Anderson, Cherokee, Greenville, Oconee, Pickens, Spartanburg, Union
2	Abbeville, Chester, Edgefield, Fairfield, Greenwood, Kershaw, Lancaster, Laurens, Lexington, McCormick, Newberry, Richland Saluda, York
3	Chesterfield, Clarendon, Darlington, Dillon, Florence, Georgetown, Horry, Lee, Marion, Marlboro, Sumter Williamsburg
4	Allendale, Bamberg, Barnwell, Beaufort, Berkeley, Calhoun, Charleston, Colleton, Dorchester, Hampton, Jasper, Orangeburg
5	Aiken

Table 2. American Medical Association Specialty Groupings

GENERAL PRACTICE

Family Practice
General Practice

MEDICAL SPECIALTIES

Allergy
Cardiovascular Disease
Dermatology
Gastroenterology
Internal Medicine
Pediatrics
Pulmonary Diseases

SURGICAL SPECIALTIES

Colon and Rectal Surg.
General Surgery
Neurological Surg.
Obstetrics and Gyn.
Ophthalmology
Orthopedic Surgery
Otolaryngology
Plastic Surgery
Thoracic Surgery
Urology

OTHER SPECIALTIES

Aerospace Medicine
Anesthesiology
Child Psychiatry
Diagnostic Radiology
Forensic Pathology
General Preventive Medicine
Neurology
Occupational Medicine
Pathology
Physical Med. & Rehabilitation
Psychiatry
Public Health
Radiology
Therapeutic Radiology

The gains and losses indicated between 1965 and 1970, 1970 and 1975, and 1965 and 1975 do not sum to the next year's total. This discrepancy exists because gains and losses were determined using the entire data base. A physician may remain within the population but not within the population of physicians, administrators, and practicing non-Federal residents. For example, a physician who retires remains in the data base but is considered a "loss" to the population under discussion. Similarly, a military physician who enters private practice is a "gain" to the population under discussion.

RESULTS AND DISCUSSION

In 1965, there was a total of 1829 physicians with 1685 physicians in practice or administration, 107 in residencies or internships, 21 in the military, and 16 in retirement (Table 3). Ten years later, the population had increased by 1036 physicians for a total of 2444 in practice or administration, 264 in residencies or internships, 89 in the military, and 65 in retirement* (Table 3).

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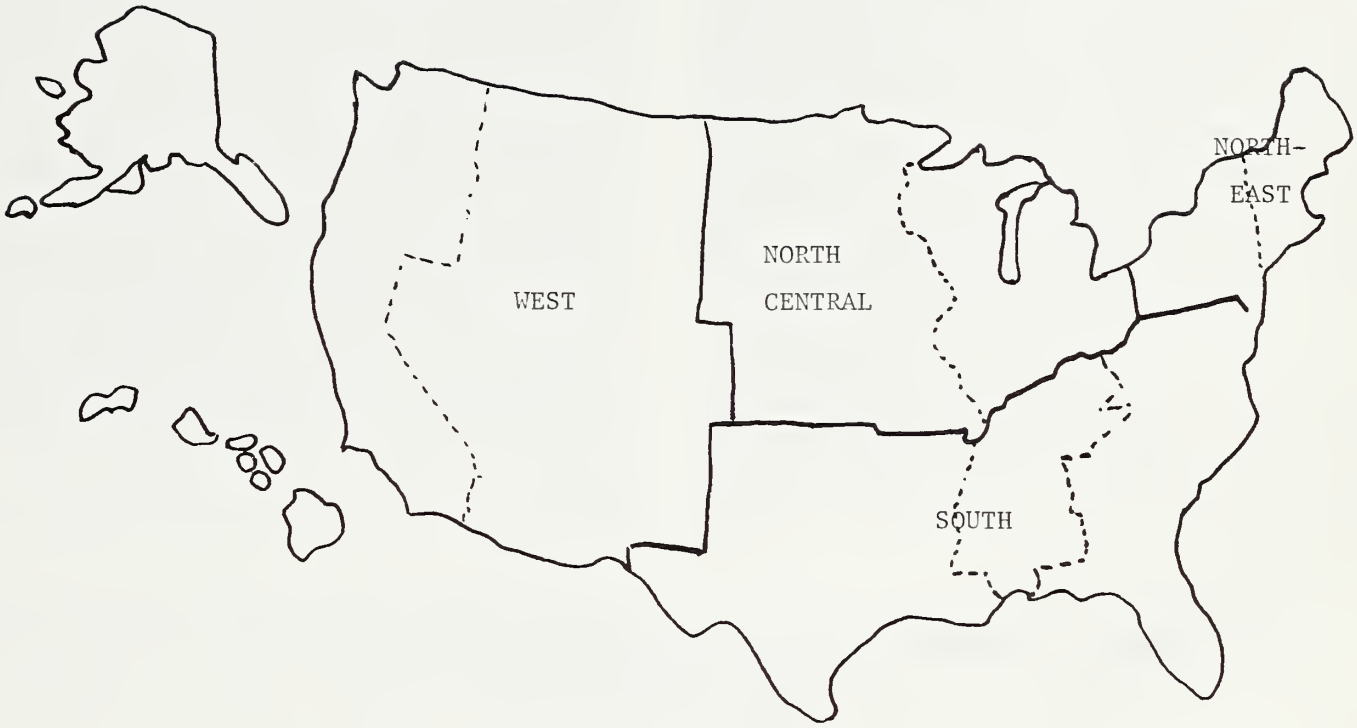
* Due to directory publication deadlines, some physicians are not included in the directory but in a supplement. These physicians are reflected in the next year's total.

Figure 1. Map of the United States Showing Census Regions and Divisions



Source: U.S. Bureau of the Census, Statistical Abstract of the U.S., 1972.

Table 3. Number of Physicians in South Carolina by Activity
1965, 1970, 1975

	Practicing Physicians	Administrators	Residents	Interns	USPHS	Military	Retired	Total
1965	1667	18	79	28		21	16	1829
1970	1906	22	128			70	54	2180
1975	2418	26	264		3	89	65	2865

Between 1965 and 1970, there was a 14.7 per cent increase in physicians, administrators, and residents. In the subsequent five-year interval, the same group of physicians increased 31.4 per cent. The state's population was 2.494 million in 1965 and increased 4.1 per cent in the next five year interval. It increased to 2.818 million or another 8.8 per cent between 1970 and 1975.[9]

The age distribution of the physician population shifted noticeably between 1965 and 1975 (Table 4). The increase in residencies (107 to 264) over the ten-year period contributed to the increased percentage (31 per cent to 33 per cent) of physicians less than 40 years old. In 1965, the percentages of physicians 39 and younger, 40 to 59, and 60 or older were 31, 52, and 17 respectively, while in 1975, the corresponding figures were 33, 51, and 16 per cent. Therefore it appears that the South Carolina physician population is not in equilibrium but is experiencing an increased in-migration of younger physicians.

In 1970, the five HSAs contained 26, 27, 21, 25, and 1 per cent of the state population, respectively. Standard Metropolitan Statistical Areas (SMSA) are presently located in HSAs 1, 2, and 4.

The distribution of physicians within HSA changed slightly between 1965 and 1975 (Table 5). The largest change (and only increase) in physician distribution during this time interval was a 5 per cent increase in HSA 4 accompanied by small percentage decreases in HSAs 1, 2, and 3. The mere 2 per cent of the physician population practicing in HSA 5 makes this region appear underserved. However, due to its proximity to Georgia, Aiken County is included in a health service area which spans the South Carolina-Georgia border. This is the justification for placing Aiken County residents within a Georgia HSA.

Table 4. Number and (Cumulative Percentage) of Physicians in South Carolina by Age 1965, 1970, 1975

	AGE INTERVAL					
	25-29	30-39	40-49	50-59	60-69	70-
1965	50(3)	507(31)	591(64)	340(83)	186(93)	118(100)
1970	66(3)	537(29)	673(62)	441(84)	237(95)	102(100)
1975	198(7)	696(33)	726(60)	649(84)	315(95)	127(100)

Table 5. Number and (Percentage) of Physicians in South Carolina by Health Service Area 1965, 1970, 1975

	HEALTH SERVICE AREA					
	1	2	3	4	5*	Total
1965	506(28)	528(29)	277(15)	449(25)	41(2)	1792
1970	589(29)	581(28)	299(15)	545(27)	42(2)	2056
1975	744(27)	744(27)	362(13)	802(30)	56(2)	2708

*Health service area 5, spanning the South Carolina-Georgia border, contains one South Carolina county.

Of every 100 practicing physicians in South Carolina in 1965, 43 were in general practice, 15 in medical specialties, 28 in surgical specialties, and 14 in other specialties (Table 6). Of every 100 practicing physicians in 1975, 28 were in general practice, 19 in medical specialties, 31 in surgical specialties, and 21 in other specialties. Thus, since 1965, there has been a significant shift in the physician distribution by specialty within South Carolina. The percentage of physicians in general or family practice has decreased 15 per cent. Concurrently, the percentage of physicians in medical specialties increased 4 per cent; in surgical specialties, 3 per cent; and in other specialties, 7 per cent. This trend was already in evidence in the interval between 1965 and 1970.

Graduates of 73 medical schools in 29 states, the District of Columbia, and foreign countries were present in South Carolina in 1965 (Table 7). In 1975, 15 additional schools and 6 more states were represented. Graduates of schools located in the West region were the smallest group of physicians each year.

Between 1965 and 1975, there was a 6 per cent increase in physicians trained in the Northeast, North Central, West, and Foreign regions and a resultant decrease in physicians from schools in the South region. The largest percentage increase was a 2 per cent gain in physicians from each of two regions: North Central and Foreign.

In the ten-year interval, the number of foreign-trained physicians more than quintupled and the number of North Central region physicians almost tripled. In spite of the large numerical increase, foreign-trained physicians in South Carolina represented only 3 per cent of the population in 1975. Nationwide, foreign medical school graduates constituted 17 per cent of the population in 1970.[10]

Between 1965 and 1970, there was an average annual net increase of 22.8 Medical University of South Carolina (MUSC) trained physicians in the South Carolina population with a corresponding increase of 34.6 out-of-state trained physicians

Table 6. Number and (Percentage) of Physicians in South Carolina by Specialty 1965, 1970, 1975

	SPECIALTY			
	General	Medical	Surgical	Other
1965*	752(43)	259(15)	484(28)	251(14)
1970	692(34)	339(17)	638(31)	365(18)
1975	757(28)	516(19)	841(31)	568(21)

*Also included 28 interns not identified by specialty.

Table 7. Number and (Percentage) of Physicians in South Carolina by Medical School Location 1965, 1970, 1975

	MEDICAL SCHOOL LOCATION				
	Northeast	South	North Central	West	Foreign
1965	112(6)	1609(90)	48(3)	7(.4)	16(1)
1970	122(6)	1820(89)	69(3)	12(1)	33(2)
1975	197(7)	2266(84)	140(5)	17(1)	91(3)

(Table 8). This larger increase of out-of-state trained physicians is reflected in the 3 per cent “decrease” in South Carolina-trained physicians in the state between 1965 and 1970 (Table 9). This is further evidence that the population was not in equilibrium.

In the next five-year interval, 1970 to 1975, the aforementioned trend was even more distinct with an average annual net increase of 42.2 MUSC-trained physicians and an average annual net increase of 89.2 out-of-state trained physicians. Consequently, the percentage of MUSC-trained physicians in the state population declined to 53 per cent (Table 9). In the ten-year interval, accentuated in the last five-year interval, there was a large in-migration of physicians.

SUMMARY

Between 1965 and 1975, the South Carolina physician population increased more rapidly than the general population. The practicing physician population ratio excluding both Federal and retired members, increased from an estimated 72 physicians per 100,000 population in 1965 to 96 in 1975. Most of the increase has occurred in areas with high population densities. This aspect of the change suggests adherence to the urban-rural phenomenon, i.e., physicians tend to locate in urban areas.

With respect to age, there was a trend toward a younger physician population. The change in age distribution resulted from a significant increase in the number of in-state resident and intern slots created and filled, and an increased number of newly trained physicians from both in-state and out-of-state residency training programs initiating practice in South Carolina.

Between 1965 and 1975, the percentage of general practitioners in South Carolina decreased although the number remained about the same. In the first five-year interval, the 9 per cent decrease in generalists was accompanied by a decline in the actual number. Between 1970 and 1975, the actual number increased and the decrease in the percentage was only 6 per cent. Thus it appears the trend reversed itself in the second interval. The reversal is at least partially the result of the establishment of a family prac-

Table 8. Number and (Average Annual Change) of Physician Gains and Losses in South Carolina by Medical School 1965-1970, 1970-1975, and 1965-1975

	GAIN			LOSS		
	MUSC	ALL OTHER	TOTAL	MUSC	ALL OTHER	TOTAL
1965-1970	252(50.4)	281(56.2)	533	138(27.6)	108(21.6)	246
1970-1975	340(68.0)	582(116.4)	922	129(25.8)	136(27.2)	265
1965-1975	555(55.5)	784(78.4)	1339	220(22.0)	170(17.0)	390

Table 9. Number and Percentage of MUSC Graduates in South Carolina Compared to Those from All Other Schools 1965, 1970, 1975

	MUSC	ALL OTHER	$\frac{\text{MUSC}}{\text{Total}}$ (%)
1965	1127	619	63
1970	1228	806	60
1975	1441	1241	53

tice residency program in South Carolina.

Also, in the ten-year interval, South Carolina experienced a steady increase in the number of MUSC-trained physicians staying in the state. Since it is too early for increased class size to be a factor, it appears that South Carolina is becoming a more attractive place for its graduates to initiate practice. Simultaneously, the number of out-of-state trained physicians who have established practices in South Carolina increased. The average annual net gain of out-of-state trained physicians was higher in the 1965-1970 interval than the average net gain of MUSC-trained physicians. Moreover, since the 1965-1970 time period, the average annual net gain of out-of-state trained physicians has almost tripled and currently accounts for more than two-thirds of the average annual increase in the physician population of South Carolina. Hence, it appears that South Carolina is becoming an increasingly attractive place for physicians to locate. ☐

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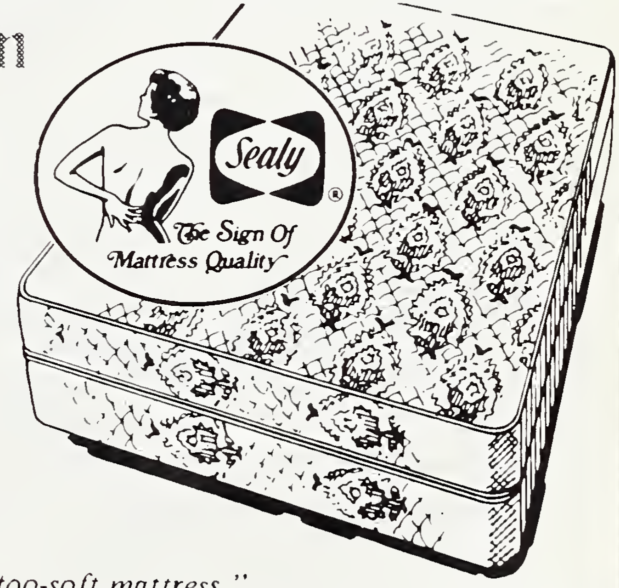
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THE STRUCTURED PRACTICE OF MEDICINE

J. GAVIN APPLEBY, M.D.*

The practice of medicine is an organization which developed along the same lines as all other bureaucracies. The present form of the organization of the practice of medicine developed in the West with the arrival of industrialization. Basically, what are the main characteristics of a bureaucracy and how do these characteristics fit into the practice of medicine?

There are two basic facts which are important to us in this relationship. First, in our system of organization, the physician has traditionally occupied a sharply defined slot in the division of labor. Second, he fits into a vertical hierarchy, a chain of command running from the first receptionist in the primary practice of medicine to the highest, most specialized physician in a particular area of organization. His organization relationships, as Weber has emphasized in his study of bureaucracies, tend toward permanence. Each physician and each of his workers fill a precise position slot, a fixed position in a more or less fixed environment. Each knew exactly where his department started and where it ended and where the next began. Lines between the substructures of organization have been anchored firmly in place. A physician does develop a comparatively permanent web of relationships, not merely with other physicians who tended to remain in their slot for a long time, but with the organizational framework itself. Today, there is mounting evidence that the duration of a physician's organizational relationships is shrinking. These relationships are turning over at a faster and faster rate to doom our present organization of medicine.

So long as our society was relatively unchanging and stable, the problems it presented to the physician tended to be routine and predictable. Physicians in such an environment can be relatively permanent. Rapidly changing environmental settings force the organizational geography for our super-industrial society to become increasingly kinetic. We are moving away from long enduring to temporary forms. We are moving away from our standard form of medical bureaucracy.

This process is most easily seen in industry where many men have written of this problem. Professor William H. Reed of the Graduate School of Business of Magill University has written that "the central, crucial, and important business of organization is increasingly shifting from up and down to sideways." This is an entirely new concept and forces those within the organization to behave differently and to operate under different pressures than those who must communicate up and down in hierarchy. To illustrate this, let us examine one organizational aspect of medicine which has already adopted this philosophy, that is, the intensive care unit for coronary cases in the hospital. Prior to the development of these units a coronary case in the hospital which developed some complication and this complication may have been picked up by an orderly or nurse's aid; who transmitted the difficulty to a nurse; who in turn transmitted it to a physician; who in turn retransmitted to the nurse the therapy required; the nurse in turn rendered the care or the nurse's aide under her was directed to deliver a specific treatment. This is a straight up and down hierarchy. With the development of Intensive Care Units, the machine picked up the difficulty or complication of the patient, the nurse read the complication directly and through a prescribed protocol immediately instituted therapy for this complication if the machine did not do it itself. She notified the doctor who was made cognizant of the difficulty and may make arrangements for the prevention or recurrence of this complication in the future. This is a sideways bureaucracy in which a certain amount of autonomist authority rested in the lower echelon of the hierarchy, and it is unnecessary to go straight to the top of the hierarchy before the therapy can be instituted.

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* 202 Gavin Street, St. George, South Carolina 29477.

Mr. Frank Metzger, Director of Personnel Planning for International Telephone and Telegraph Corporation has said recently, "You no longer have the strict allegiance to hierarchy. You may have five or six levels of the hierarchy represented in one meeting. You have tried to forget the hierarchy level and organize to get the job done." According to Professor Reed this represents a staggering change in thinking and decision making in organizations. Thus, "the only truly effective method of preventing or coping with problems of coordination and communication in our changing technology will be found in new arrangements of people and tasks in arrangements which sharply break the bureaucratic tradition." There are some frontier organizations in medicine in which new systems of human relationships are appearing in the hierarchy of medicine to a sideways moving form of mobility. According to Joseph A. Raffaele, Professor of Economics at Drexel Institute of Technology, "We must develop a working society of technical co-equals in which the line of demarcation between the leader and the led has become fuzzy." Alvin Toffler stands by this by saying "he finds increasingly that he must assume the decision making responsibility and must do so within a kaleidoscopically changing organization structure built upon highly transient human relationships." Whatever else might be said, this is not the old familiar Weberian bureaucracy.

Let us examine all this then in the light of the practice of medicine today. Figure 1 shows the infrastructure of the practice of medicine as we know it now. It has been so organized since the time of the Flexner report and is a straight up and down hierarchy. The patient makes his first entry into the practice of medicine through a receptionist who arranges an appointment. The physician then does everything for the patient, the history, the physical, the ordering of laboratory work and x-rays, etc. These reports or this evidence is returned to him and he alone makes all

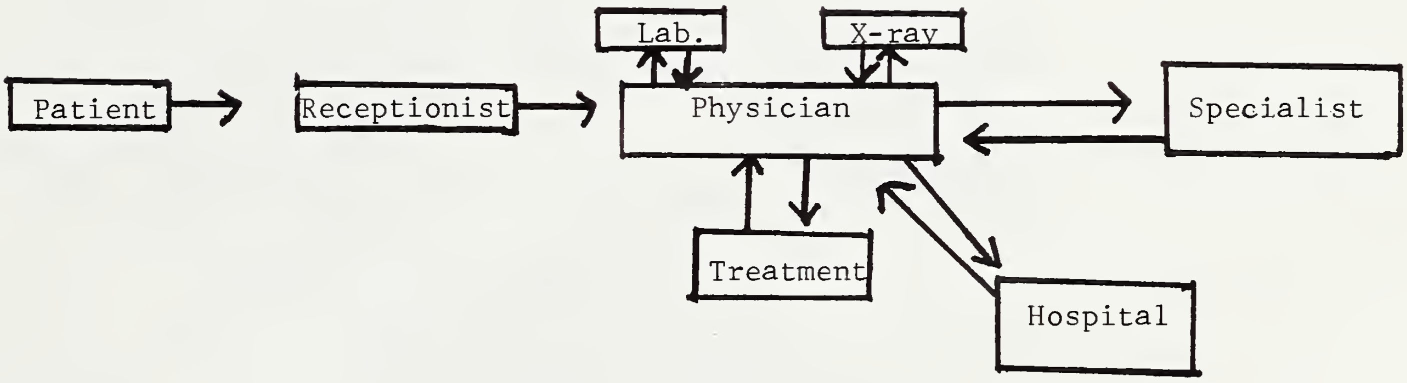

FIGURE 1

the decisions about the treatment of the patient, the referral to a specialist, or the hospitalization of that patient. Physicians do have other people working for them such as nurses. Their role heretofore has been as a helper of the physician himself. To carry out his orders, sometimes to report to him the results of his orders. They hold no responsibility in the system other than to send the word straight up the ladder to the physician. The radiologist, a man trained in a wide field of medicine, is not allowed the latitude of doing another or a different procedure until he has first contacted the original physician who ordered the initial study. To say in our modern, fast-changing environment with its new facts and new tests that this is an efficient mode of practice would be sheer folly. With increased utilization of physicians and medicine in general, the pressure applied to a physician practicing primary medicine has become intense. He is flooded with the pressure of making minute-to-minute decisions. These are now complicated decisions.

Few physicians have learned to cope with this complicated infrastructure of primary medicine and many, in exasperation, have thrown down the mantle to escape into smaller infrastructured part of medicine called a sub-specialty.

Figure 2 describes a theoretical practice of primary medicine in which sideways authority is utilized to remove many of the pressures on the physician himself. In this illustration, the patient enters the medical field through a screening nurse who screens out simple problems to a nurse practitioner or to a physician's assistant who will have some latitude or autonomist field of operation. This will be closely prescribed by protocol or flow sheets with minute directions for handling certain problems. The Physician's Assistant or the nurse practitioner may autonomously prescribe for certain problems, do certain physicals and histories, and even refer the patient to the hospital in certain instances. They may order necessary laboratory and x-ray studies then refer the patient on to the primary physi-

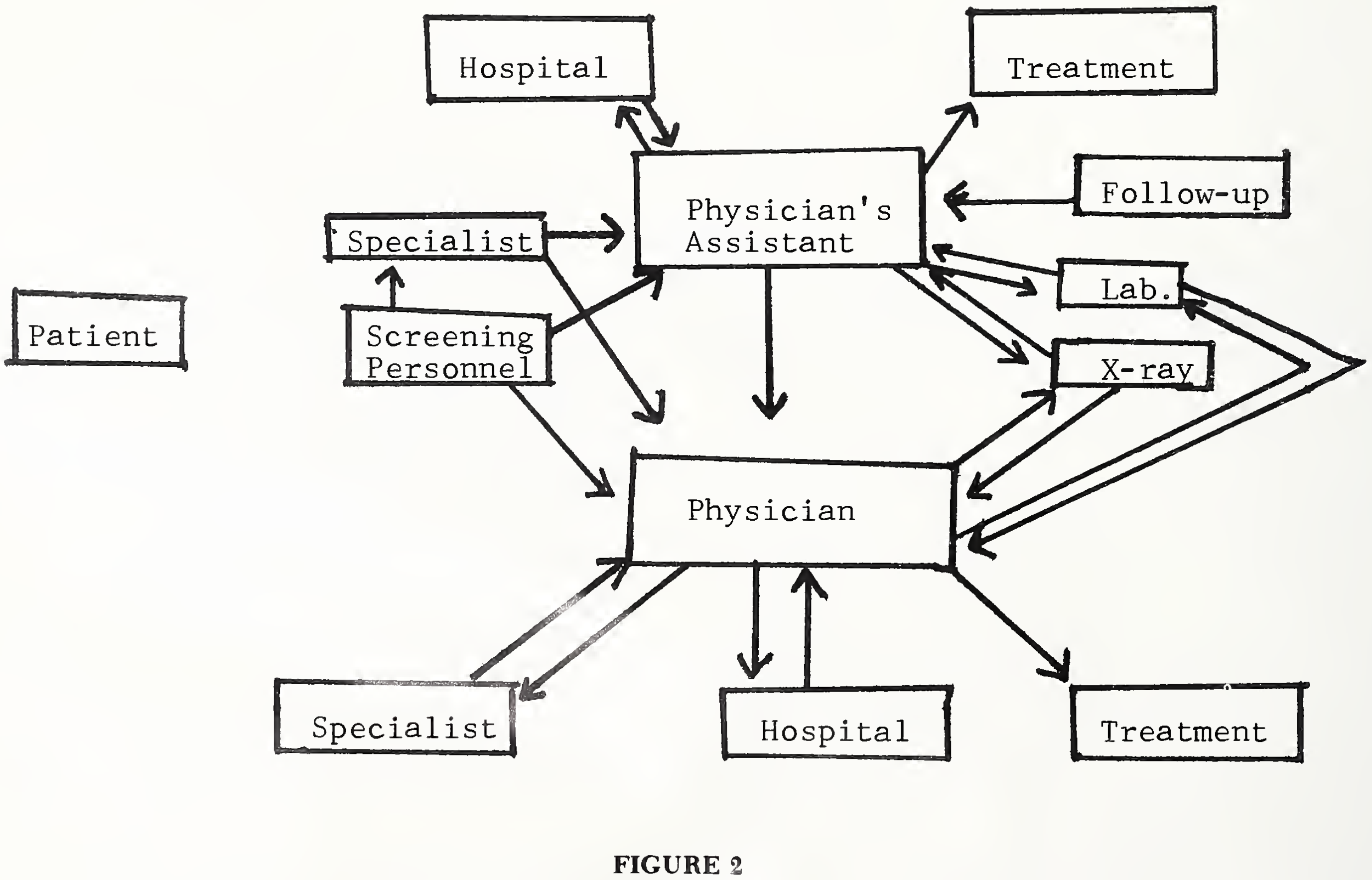

FIGURE 2

cian. A certain per cent of the acute diseases seen by the screening nurse or assistant will have to be referred directly to the primary physician. The primary physician has the usual options seen in the standard practice of medicine for handling those cases directly under his care. The AMOS program of the Army out-patient dependent care clinics at Fort Belvoir, Virginia, has found that the screening assistant can refer seventy per cent of the initial walk-in cases to physician's assistants who in turn can handle seventy-five per cent of the cases directed to them by adherring to a tightly controlled protocol of examination and treatment. Their experience has been most gratifying and the patient care has been good because strict lines of investigation and examination are used by these Physician's Assistants each time a patient is seen.

Dr. Lawrence Weed has developed his Problem Oriented Methodology. Using his type of records and criteria one can develop a standard data base and standard flow sheets of treatment which will make the utilization of infrastructure personnel applicable for the quality treatment of patients. His is the vehicle by which the structured practice of medicine can be implemented particularly with primary physicians, and should be a fluid thing. Protocols can be changed with the change of advancing knowledge. These changes will immediately upgrade the practice of medicine in those areas in which they are applied within the infrastructure. The primary physician then will become the manager of a whole team of infraspecialists within his own field. These infra personnel can be upgraded, shifted around, and more utilization of their knowledge and experience applied to the treatment of patients. The utilization of many other ideas can be imposed within this infrastructure. Dr. Kanner of the University of Kentucky has devised a very neat programmed history and programmed physical which can be utilized in this structured practice. Continuing education can be applied to the infrastructure personnel at regular intervals to have the best available knowledge ready for those patients who need it.

CONCLUSION

The structured practice of primary medicine can be instituted in some form, perhaps not the form I describe here. It is conceivable that the structured practice of medicine can relieve the intense pressures exerted on the primary physician and other physicians in the hierarchy of medicine today. We must move aside the tremendous social pressures applied to us and it is possible that the structured practice of medicine will relieve some of these pressures by increasing the number of patients that can be served, and by improving the quality of medicine by judiciously applying modern technology. □

Editorials

The following remarks, made by Dr. Banov at a non-denominational service at the South Carolina Medical Association annual meeting, April 30, 1978, were suggested for publication by those in attendance.

– CSB

SOME THOUGHTS AT A PRAYER SESSION

Knowing of their common generic origin, it is natural and sensible for medicine to associate with religion. Both the profession of medicine and the profession of theology can trace their occupational genealogy to the tribal chief, the shaman, who was medicine man and spiritual leader as well as warrior, judge, political leader, magician, you name it. We have changed from medicine men to doctors of medicine. Likewise, the nature of worship has changed from prayers to the sun, moon, and stars to prayers to a single God in what we know as our Western culture.

Physicians know why the profession of medicine developed: to serve society better by promoting good health. Good health includes good mental health, an essential to a good life.

Religion developed to increase man's knowledge and understanding and to give spiritual security to feel at home on this planet, thereby, contributing to good mental health. Religion then may be defined as "the complex of emotions and ideas that have made men seek to keep in harmony with the unseen powers governing the universe." This need for faith was recognized by all religions many, many centuries ago. Faith by religion is promoted by teachings and developed by prayer. And as we know, prayer encompasses many forms and fashions.

Outstanding individuals have embraced both theology and medicine. In the Middle Ages there was Maimonides. In our own times recall Albert Schweitzer. My own professor of physiology was both an ordained minister as well as a doctor of medicine, Dr. John van de Erve. Therefore, it is fitting to bring together today the disciplines of medicine and theology. For what does one pray?

(1) We pray for one's self. As physicians we pray for health not alone for ourselves but for others. We pray for happiness and happiness comes from service to others. The wise men of every generation have always declared that one gets the greatest satisfaction in making other people happy. We pray we will be endowed with traits our peers admire: Moderation, humility, honesty, dependability among others. And we might recall the words of Peter Marshall: "Lord, when we are wrong, make us willing to change. And when we are right, make us easy to live with."

(2) We pray our families will be healthy and happy.

(3) We pray for our community. We want the communities to prosper and to have its citizens enjoy good relations with one another.

(4) We pray for our country — that ever it will remain strong and still retain its ideals.

(5) While we pray for ourselves, family, community, and country we should pray for all because we are influenced by the acts of others. We pray for all mankind to understand and to work together towards the fatherhood of God and the brotherhood of man so that disease and hunger, bigotry and prejudice will disappear. We pray that there will be equal opportunity for all who can help themselves to seek food, shelter, and the upbuilding of their lives.

Prayer is universal. It is always interesting and fascinating to learn how others pray. Although their ways may vary, essentially all people pray for practically the same attributes. Fundamentally and basically each prays for the same life-sustaining means and the spiritual security to feel comfortable on this earth.

Prayer promotes faith. As Dr. William Osler said, "Nothing in life is more wonderful than faith — one great moving force which we can neither weigh in the balance nor test in the crucible."

Very importantly, we pray to achieve ideals. Good ideals strongly motivate people. High ideals must ever be our inspiration and motivation.

Carl Schurz put it another way: "Ideals are like stars; you will not suceed in touching them with your hands. But like the seafaring man on the desert of waters you choose them as your guides, and following them you will reach your destiny."

No profession has ever been great nor can it ever be great unless it is guided by the highest idealistic motives. We need not so much to realize the ideal but to idealize the real. I like the way Dr. Rene J. Dubos expressed it: "Among other living things, it is men's dignity to value certain ideals above comfort, and even above life. This human trait makes medicine a philosophy that goes beyond exact medical sciences, because it must encompass not only a man as a living machine but also the collective aspirations of mankind."

When compared with life in China, Africa, Eastern Europe, and Russia, Americans have a lot to thankful for. We give thanks to God for our many blessings. Particularly we welcome the opportunity to develop ourselves. We are thankful for the bounties of this land, freedom of homes, and abundance of food, and the guaranteed rights, among them freedom of worship and the freedom of assembly. And we give thanks for good health to increase our usefulness. Most particularly, we give thanks for the joy of life. It has been said one reason we ought to be more thankful for God's blessings is that we deserve very few of them.

Remember well the words of the former President of the Medical University of South Carolina, Dr. Kenneth M. Lynch, when he said, "Let us ever keep alive by constant use the high ideals we had when we first sought admission to the study of medicine." I firmly believe that theology and medicine have the capacity to make our Western civilization better and to rise above cynicism and barbarism. However, we need to be resolute and to hold high our ideals.

Our God and God of all ages bless us with this threefold benediction:

The Lord bless you and keep you.
The Lord look kindly upon you and be gracious to you.
The Lord bestow his favor upon you and give you peace.

And let us all say "Amen."

Leon Banov, Jr., M.D.
103 Rutledge Avenue
Charleston, S. C. 29401

OPPOSITION TO AMPHETAMINES

The strong resolution opposing use of amphetamines for weight control, passed at the 1978 SCMA annual convention, has now been officially endorsed by the State Board of Medical Examiners of South Carolina. The strong language of the resolution merits our attention and we understand the South Carolina Pharmaceutical Association has acted similarly.

– CSB

To the Editor:

I am pleased to report that the State Board of Medical Examiners at their recent meeting in Charleston on June 12 officially endorsed the following resolution of the South Carolina Medical Association opposing the use of amphetamines for weight control:

WHEREAS, the prescribing of amphetamines for weight control has resulted in its abuse in some communities in South Carolina; and

WHEREAS, extended use of this drug in weight control has resulted in what appears to be a medically-sanctioned tolerance and dependency by some patients and has resulted in the added abuse of amphetamines as a street drug; and

WHEREAS, the insomnia and psycho-motor agitation resulting from overuse of this drug can lead to the abuse of other drugs, such as sedative-hypnotics, and at times result in acute psychotic episodes: NOW THEREFORE

BE IT RESOLVED that the South Carolina Medical Association go on record as opposing the use of amphetamines for weight control, and therefore,

BE IT FURTHER RESOLVED, that the South Carolina Medical Association stipulate that prescribing or dispensing these drugs for this purpose is considered unethical and poor medical practice, and, therefore,

BE IT FURTHER RESOLVED, that the South Carolina Medical Association recommends that a similar resolution be adopted by the South Carolina Pharmaceutical Association to assist the dispensing practice of pharmacists in the State of South Carolina.

We request that this endorsement by the Board of Medical Examiners be published by the South Carolina Medical Association in the *Journal.*

Vernon E. Merchant, Jr., M.D.
President
State Board of Medical Examiners
of South Carolina
1315 Blanding Street
Columbia, South Carolina 29201

To the Editor:

I learned recently of the creation of the Waring Library Society which has been formed to operate an historical library in honor of the late Dr. Joseph I. Waring.

It is a pleasure to have this opportunity to endorse this splendid endeavor. I trust that our colleagues throughout the state will see fit to join and to participate in this most worthwhile activity.

With every good wish, I am

Sincerely yours,
Roderick Macdonald, M.D.
Dean, USC School of Medicine
Columbia, S. C. 29208

BRIEF SUMMARY OF
PRESCRIBING INFORMATION

ANTIMINTH® (pyrantel pamoate)
ORAL SUSPENSION

Actions. Antiminth (pyrantel pamoate) has demonstrated anthelmintic activity against *Enterobius vermicularis* (pinworm) and *Ascaris lumbricoides* (roundworm). The anthelmintic action is probably due to the neuromuscular blocking property of the drug.

Antiminth is partially absorbed after an oral dose. Plasma levels of unchanged drug are low. Peak levels (0.05-0.13 μg/ml) are reached in 1-3 hours. Quantities greater than 50% of administered drug are excreted in feces as the unchanged form, whereas only 7% or less of the dose is found in urine as the unchanged form of the drug and its metabolites.

Indications. For the treatment of ascariasis (roundworm infection) and enterobiasis (pinworm infection).

Warnings. *Usage in Pregnancy:* Reproduction studies have been performed in animals and there was no evidence of propensity for harm to the fetus. The relevance to the human is not known.

There is no experience in pregnant women who have received this drug.

The drug has not been extensively studied in children under two years; therefore, in the treatment of children under the age of two years, the relative benefit/risk should be considered.

Precautions: Minor transient elevations of SGOT have occurred in a small percentage of patients. Therefore, this drug should be used with caution in patients with preexisting liver dysfunction.

Adverse Reactions. The most frequently encountered adverse reactions are related to the gastrointestinal system.

Gastrointestinal and hepatic reactions: anorexia, nausea, vomiting, gastralgia, abdominal cramps, diarrhea and tenesmus, transient elevation of SGOT.

CNS reactions: headache, dizziness, drowsiness, and insomnia. Skin reactions: rashes.

Dosage and Administration. *Children and Adults:* Antiminth Oral Suspension (50 mg of pyrantel base/ml) should be administered in a single dose of 11 mg of pyrantel base per kg of body weight (or 5 mg/lb.); maximum total dose 1 gram. This corresponds to a simplified dosage regimen of 1 ml of Antiminth per 10 lb. of body weight. (One teaspoonful=5 ml.)

Antiminth (pyrantel pamoate) Oral Suspension may be administered without regard to ingestion of food or time of day, and purging is not necessary prior to, during, or after therapy. It may be taken with milk or fruit juices.

How Supplied. Antiminth Oral Suspension is available as a pleasant tasting caramel-flavored suspension which contains the equivalent of 50 mg pyrantel base per ml, supplied in 60 ml bottles and Unitcups™ of 5 ml in packages of 12.

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President's Page

POLITICS — TIME TO GET INVOLVED

In a Presidential off-year, with no exciting national political conventions on TV or in the papers, it is hard for me, as I write this in early August, to generate a compelling interest in the November elections. It may be equally difficult for you, when you read this in September, to get worked up over politics, at a time when school openings, Saturday football games, dove shoots, deer drives, and many other activities claim your time and interest.

But it is truly imperative for all of us to be deeply concerned in the political process — not just on Election Day, but throughout the fall campaigns.

I fully realize that many of you have been actively involved earlier this year in the Democratic and Republican Primaries. If your favorite candidate(s) won, you undoubtedly are continuing your active support. But even if your Primary favorite is now out of the running, you still have a choice to make — in every race. It is a choice that you must make wisely, considering important issues as well as personalities. The future of our own profession, and even the fate of the entire country, may hinge upon the Congressmen and Senator whom we send to Washington this November. Our daily lives in coming years will certainly be deeply affected by our next Governor, by our state legislators, and by those who will be elected to local government.

We cannot afford to sit on the sidelines, to take a neutral position, or to let others assume the initiative and responsibility. There are many whose desires are inimical to ours who will be more than glad to do just that.

Furthermore, we must not be content merely with picking a candidate and voting for him on Election Day. That *is* important, but it is not enough. It takes money to conduct a campaign — we must give generously and wisely. Beyond this, each of us should wield his considerable influence with patients, families and friends. Each of us can reach and influence dozens, perhaps hundreds or even thousands, before Election Day if we will just take the time and make the effort. To do less is to shirk our responsibility.

It would be improper for me to use this Page to tell you whom to support, although I have very definite ideas and personal commitments, which I may make known through other channels. I believe no one, however, will challenge the propriety of my taking this opportunity to express the appreciation of the medical profession, and indeed of the state, to one who will not be running for office this fall — Governor James B. Edwards. I believe that Jim will be long remembered as one of the great Governors of South Carolina: humble, dedicated, courageous — always committed to the good of all the people of our state. We owe him a debt of gratitude.

History records the active participation and outstanding contributions of our South Carolina medical forebears in the political process — from the signers of the Declaration of Independence to the present day. I urge each of you to accept the challenge to be worthy successors of this heritage and to work to ensure that the best possible candidates are elected to office in South Carolina on November 7.

John C. Hawk, Jr., M.D.
President

AUXILIANS — INFORMED, COMMITTED, INVOLVED IN LEGISLATIVE ACTIVITY

What an active and *important* election year this is! The people of South Carolina will be electing: a new Governor, a Lieutenant Governor, 124 members of the State House of Representatives, 1 U. S. Senator, 6 U. S. Representatives, and numerous local officials. With government becoming increasingly involved in our personal lives, we know how important it is to become knowledgeable about each candidate's position on matters that affect us. You are urged to actively support those candidates who would best represent your views on important political issues. Make a commitment to the candidates of your choice and become active in their campaigns.

Please, also, consider becoming a member of the South Carolina Political Action Committee (SOCPAC). SOCPAC is a voluntary, non-profit committee of S. C. physicians which has no political affiliations. Its aims are to encourage physicians to take a more active part in government affairs and to become aware of political issues as well as the records of office-holders and candidates. Its Board of Directors is composed of physicians from each of South Carolina's Congressional Districts, a representative of the Auxiliary and the SCMA Legislative Committee. Through the organized efforts of SOCPAC, your membership dues will be used to help finance the campaigns of S. C. legislators who will work on behalf of the medical profession in our state.

Membership dues are: Sustaining — $100, Family — $50, Single — $35. Please make your check payable to SOCPAC, and mail to P. O. Box 11188, Columbia, South Carolina 29211.

You need to join, also, another organization which costs nothing but either has or will soon affect your lives — your local Health Systems Agency. By act of Congress, a national network of HSA's has been established to be responsible for health planning development. HSA's are funded by the Department of H.E.W. and all citizens are eligible for membership. All you have to do is call or write for an application.

South Carolina is divided into districts as follows:

#1 Greenville Appalachian Health Council HSA
Box 6708
Greenville, S. C. 29206
(Counties of Anderson, Cherokee, Greenville, Oconee, Pickens, Spartanburg, Union)

#2 Three Rivers HSA, SCMA Building
3325 Medical Park Drive
Columbia, S. C. 29203
(Counties of Abbeville, Chester, Edgefield, Fairfield, Greenwood, Kershaw, Lancaster, Laurens, Lexington, McCormick, Newberry, Richland, Saluda, York)

#3 Peedee Agency HSA
Box 5959
Florence, S. C. 29501
(Counties of Chesterfield, Clarendon, Darlington, Dillon, Florence, Georgetown, Horry, Lee, Marion, Marlboro, Sumter, Williamsburg)

#4 Palmetto Low Country HSA, Inc.
Professional Building
107 West 6th North Street
Summerville, S. C. 29483
(Counties of Allendale, Bamberg, Barnwell, Beaufort, Berkeley, Calhoun, Charleston, Colleton, Dorchester, Hampton, Jasper, Orangeburg)

#5 East Central Georgia HSA
Box 3954
Augusta, Ga. 30902
(Aiken County)

We look forward to working with all of you this year. We plan workshops in Charleston, October 26th and Rock Hill, November 1st, for all who are interested. Remember — BE INVOLVED!

Mary Smith (Mrs. J. Rutherford) and
Skippy Adkins (Mrs. W. Y.)

REPORT ON THE AMERICAN MEDICAL ASSOCIATION HOUSE OF DELEGATES ANNUAL CONVENTION, ST. LOUIS, MISSOURI, JUNE 18, 1978

C. TUCKER WESTON, M.D.

The South Carolina Medical Association was represented at the AMA convention, June 18-22, 1978, by Drs. Harrison L. Peeples (Senior Delegate), C. Tucker Weston (Junior Delegate), John D. Gilland (Alternate Delegate), Waitus O. Tanner (Alternate Delegate), John C. Hawk, Jr. (President, SCMA), and Halsted M. Stone (Chairman of Council, SCMA), and by Mr. Charles Johnson (Executive Director, SCMA).

The entire SCMA delegation participated in the breakfast and the Southeastern caucus to hear the candidates for office, early Sunday morning, June 18, 1978. Drs. Hawk and Peeples also participated in the meeting of the presidents of the state medical associations. The formal session began at 2:00 PM on Sunday, June 18, with 268 of the 270 possible delegates being seated.

During the opening session of the House of Delegates, the following awards were presented: (1) the Distinguished Service Award to Dr. William P. Longmire, Jr.; (2) the Citation of a Layman for Distinguished Service to Mr. John Alexander McMahon (President of the American Hospital Association) and to Mr. J. Ed McConnell (a retired Blue Cross-Blue Shield Executive); (3) the William Beaumont Award in Medicine to Dr. H. Belton P. Meyer; (4) the Scientific Achievement Award to Dr. F. Mason Stones; (5) the Dr. Rodman E. Sheen and Thomas G. Sheen Award to Dr. Karl A. Menninger; and (6) the Joseph B. Goldberger Award in Clinical Nutrition to Dr. Lloyd J. Filer, Jr.

The AMA Education and Research Foundation reported that the AMA Auxiliary contributed $1,577,372 at the annual meeting, and that the Audio Digest Foundation contributed $50,000.

During the four days of the convention, some 300 items of business were considered. These items are too numerous to list in their entirety, but some of the important ones are summarized below.

Of special interest was the consideration of the proposed revision of the Principles of Medical Ethics. The topic prompted considerable discussion. One California delegate, Dr. Frank A. Rogers, argued that the changes were "in response to a challenge by governmental agencies," and urged the house to reaffirm the current ethical principles. Speaking for the Board of Trustees, Dr. H. Thomas Ballantine, Jr., argued that the proposed changes involved basically "nothing . . . except the wording."

Ultimately, the House of Delgates asked the Judicial Council to reconsider the proposed changes. The House adopted the recommendation that a special committee of the House of Delegates be appointed to meet with the Judicial Council and representatives of the Board of Trustees to study and reconsider the revision of the Principles of Medical Ethics. Thus, further action would be delayed until the 1978 interim meeting of the House of Delegates.

Some important bylaws changes were made to encourage more younger physicians and physicians-in-training to join the American Medical Association.

One resolution, adopted, allowed for a resident to become a full voting member of the Council. A resolution concerning reorganization of the Student Business Section, according to a plan developed by that body last year, was also adopted.

Extensive debate concerned the Report of the

National Commission on the Cost of Medical Care. One recommendation — asking physicians to agree upon reimbursement fees for service — was rejected by the House. It was the feeling of the delegates that fee information should continue to be made available to patients, and that patients' ability to pay should be considered. There was opposition to the imposition of uniform fee schedules.

With this one exception, all other recommendations of the National Commission on the Cost of Medical Care were either approved by the House, or referred to other bodies or for additional study. The overall document provided by the National Commission on the Cost of Medical Care was extensive and sometimes confusing to many of the delegates, especially since it attempted not only to recommend factors which might help contain costs, but also attempted to elucidate the factors responsible for increasing costs. It was clear, however, that the House of Delegates shared the concern of the Commission on the Cost of Medical Care that solutions must be found.

Several major discussions regarding government regulations took place. Some of these follow.

First, regarding the establishment of national PSRO council guidelines, the following substitute resolution was adopted: "Resolved, that the American Medical Association vigorously oppose any attempt to mandate the use of PSROs by national criteria without allowing for local amendment, modification, or adaptation, and the criteria be used for screening purposes only subject to peer review."

Secondly, regarding the subject of second opinions prior to surgery, a resolution was passed calling for conscientious evaluation of the methodologies and long-term results of second opinion programs.

Third, a resolution (number 119) was discussed concerning third party abrogation of the medical judgment of physicians and third-party determination of medical necessity. As a substitute for this resolution, the following was adopted: "Resolved, that the American Medical Association urge all health insurance carriers and government health care financing agencies to rely on appropriate medical peer review programs for adjudication and resolution of all matters concerning the quality or utilization of medical services which require professional judgment; and be it further resolved, that peer review programs shall have as their goal both improved quality of medical care and more efficient delivery of medical services."

Additionally, a resolution (number 129) was discussed, which urged an AMA investigation of and opposition to the "gap-fill" method of determining Medicare profiles. Amended, this resolution was adopted as follows: "Resolved, that the American Medical Association undertake an in-depth investigation of the "gap-fill" method used in Medicare fee profiles, and be it further resolved, that the AMA initiate appropriate steps and actions, including legal recourse if indicated, to drop the "gap-fill" method from Medicare profiling procedures if the Board of Trustees deems it appropriate."

Another resolution (number 139) requested that the AMA develop a program to obtain Congressional approval of Current Procedural Terminology, Edition IV, in the Medicare program. The following substitute resolution was adopted: "Resolved, that the American Medical Association develop a program to obtain Congressional and Executive Branch approval of Current Procedural Terminology, Edition IV (CPT-4), enlisting the support and participation of state associations, specialty societies, county medical societies and other interested parties; and be it further resolved, that this program be pursued vigorously and promptly."

The subject of Health Systems Agencies' (HSAs) governing bodies prompted much discussion. Regulations regarding the composition and selection of these governing bodies had been proposed. The House of Delegates opposed these proposals. It was felt that medical societies must increase their involvement in these planning activities. Principles for implementing such involvement included the following: (1) monitoring of HSA plans, and providing commentary to the HSA during the various development phases; (2) establishing state and local physician bodies for such monitoring; (3) maintaining dialogue with other medical societies, regarding dealings with HSAs; (4) enlisting of expertise from qualified individuals for interpretation of HSA law stipulations; (5) establishing programs for informing consumers; (6) monitoring the use of data, and assisting HSAs and PSROs in interpretation of data; (7) identifying, and distributing, information on any adverse effects of planning law regulations on patient care; (8) assuring that physicians' offices be excluded from review; and (9) providing adequate staff to monitor HSA activities.

A resolution (number 136) was discussed, in which it was urged that the AMA appeal to the President to intervene in Department of Health, Education, and Welfare programs on behalf of the medical and health needs of rural America.

After discussion, the following substitute resolution was adopted: "Resolved, that the American Medical Association express its continuing concern for the medical and health needs of citizens in rural America, particularly those problems resulting from inadequate consideration of special rural problems in health planning guidelines and from discrepancies in reimbursement to providers in rural areas, and continue to seek remedies to these problems."

A Resolution regarding CME accrediting changes was rejected, thus possibly affecting the future of plans for the SCMA to become further involved in accrediting medical education programs in South Carolina. The Resolution proposed that state medical societies be the *only* authorized agencies for accrediting medical education programs. By the rejection of this Resolution, the LCCME will remain the responsible agent for making the definitive decision, although state medical societies will continue to have the right to conduct surveys of CME programs and make recommendations for accreditation.

During the closing session of the House of Delegates, Tom E. Nesbitt, M.D., was installed as the new President of the AMA. In his inaugural address, Dr. Nesbitt urged physicians to *reduce the rate of their professional fee increases over the next two years.* This statement has been misquoted in the press just recently as Dr. Nesbitt having urged physicians to *reduce their fees.*

Hoyt D. Garner, M.D., a recent visitor to South Carolina for the SCMA House of Delegates meeting last spring, was elected President-Elect. Five members of the Board of Trustees of the AMA were elected. For three-year-terms, re-elected were Robert B. Hunter, M.D., Sedro Wooley, M.D., Board Chairman, Joseph Boyle, M.D., and Charles Max Cole, M.D. Elected to a three-year term was William S. Hotchkiss, M.D. To serve a two-year term to replace Dr. Gardner was George A. Rowland, M.D. Named to the Executive Committee of the Board of Trustees were Dr. Hunter as Chairman, Dr. Frank J. Jirka, AMA President Tom E. Nesbitt, M.D., Dr. Gardner, and Trustees Dr. Boyle and Dr. Steen. William Y. Rial, M.D., was re-elected Speaker of the House by acclamation, with Harrison L. Rogers, Jr., M.D., re-elected Vice Speaker, also by acclamation.

Speaking on behalf of the entire SCMA Delegation, we appreciate the opportunity of representing the SCMA and the physicians in South Carolina at these meetings of the AMA at which such important issues in health care are decided. ☐

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PHYSICIANS IN THE NEWS

JOHN FLEMING, M.D., HONORED

Dr. John Fleming was honored recently by the Spartanburg County Medical Society for his long and active work with the State Aid Cancer Clinic. Dr. Fleming established this clinic, the first of its kind in the southeast, in 1934 and has served as its Executive Director for 44 years. The Resolution, passed by the Spartanburg County Medical Society is as follows:

"WHEREAS, on September 3, 1934, John M. Fleming, M.D., founded the first State Aid Cancer Clinic in the southeast at the Spartanburg General Hospital and

WHEREAS, Dr. Fleming has served continuously as the Director of this clinic since its founding and

WHEREAS, the victims of cancer in our Piedmont area have been served with excellence and genuine concern regardless of means for forty-four years and

WHEREAS, John Fleming has been the guiding force of this institution in our community thereby directing care to literally thousands of unfortunate victims of cancer in our area of the south and

WHEREAS, John M. Fleming, M.D., still actively leads us with his wise counsel and daily teaching to better care for our cancer patients, therefore

BE IT RESOLVED that the Spartanburg County Medical Society this eleventh day of April, nineteen hundred and seventy-eight, honor our colleague for his lifelong effort to better the lives of cancer patients and

BE IT FURTHER RESOLVED that we the members of the Spartanburg County Medical Society make known to all men the high esteem and love in which we hold our fellow physician and

BE IT FURTHER RESOLVED that copies of this resolution be sent to the South Carolina Medical Association and the American Medical Association."

MEDICAL MEETINGS

The Sixth Annual Pediatric Dermatology Seminar will take place in Darwin's Galapagos Islands, February 17-25, 1979. Daily lectures and discussions will be led by Dr. Guinter Kahn. CME credit will be awarded. The tuition is $150.00. For information, contact Guinter Kahn, M.D., 16800 N.W 2nd Avenue, North Miami Beach, Florida 33169.

* * * *

"Radiation Biology in Cancer Research" will be the topic of the 32nd Annual Symposium on Fundamental Cancer Research, to be held in Houston at the Shamrock Hilton Hotel, February 28 - March 2, 1979. Co-Chairmen of the Seminar are Doctors H. Rodney Withers and Raymond E. Meyn. For information, write Stephen C. Stuyck, M.D., Anderson Hospital and Tumor Institute, Houston, Texas 77020.

* * * *

D. H. Robinson, M.D., General Chairman, announces a Southeastern Occupational Health Conference, November 9-11, 1978 at the Hyatt Hotel on Hilton Head Island, S. C. For detailed information, contact Dr. Robinson at Box 21372, Columbia, S. C. 29211.

* * * *

The 35th Annual Congress of the American College of Allergists will be held January 27-31, 1979 in San Francisco, California. Credit for Category I, Continuing Medical Education for the AMA Physician Recognition Award will be granted on an hour-for-hour basis. For information, write the Executive Secretary, American College of Allergists, 2141 Fourteenth Street, Boulder, Colorado 80302.

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Application to mail at controlled circulation rates is pending at Columbia, SC.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

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THE JOURNAL
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VOLUME 74 OCTOBER 1978 NUMBER 10

VASODILATOR THERAPY OF HEART FAILURE

CHRISTIE B. HOPKINS, M.D.*

Traditional management of the patient with chronic refractory heart failure has included bedrest, digitalis, salt restriction, and diuretic therapy. In the past few years, increasing emphasis has been placed on the role of vasodilator drugs in the management of this syndrome.[1, 2] In this article, I would first like to review: (1) the determinants of cardiac function, (2) the alterations of cardiac function in heart failure, and (3) the ways in which counterproductive reflex mechanisms can be favorably altered.

The basic determinants of cardiac output include heart rate, preload, myocardial contractility, and afterload. Preload may be equated with end-diastolic pressure or volume, as these parameters reflect myocardial fiber stretch. Afterload is the resistance to ventricular ejection, determined mainly by ventricular wall tension and by mean aortic blood pressure.

Alterations in any of the basic determinants of cardiac function may result in clinical heart disease. First, myocardial contractility is impaired in ischemic heart disease, myocarditis, and cardiomyopathy. Next, a state of ventricular underloading may exist (inadequate preload). This is seen in hypovolemic shock or in conditions such as mitral stenosis where the left ventricle cannot fill adequately. Finally, a state of ventricular overloading can be present — this may be a pressure overload, as in hypertension or aortic stenosis; or may be a volume overload, as in aortic regurgitation or mitral regurgitation.

When clinical disease is present, several cardiac compensatory mechanisms are called into play. The first of these is the Frank-Starling principle as shown in Fig. 1. An increase in end-diastolic volume increases muscle fiber length causing the ventricle to contract more forcefully, allowing more cardiac work to occur. Secondly, the sympathetic nervous system is stimulated to increase its output, resulting in an increase in heart rate and contractility as well as an increase in systemic vascular resistance. Venoconstriction also occurs, increasing venous return to the heart, thus increasing preload.

A decrease in cardiac output, therefore, is compensated by an increase in systemic vascular resistance, which allows maintenance of blood pressure within an effective range. The more rapid heart rate increases the cardiac output directly.

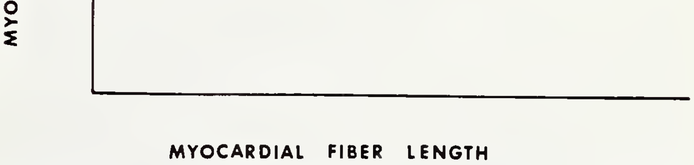

FIGURE 1. The Frank-Starling Principle. As initial myocardial fiber length increases, the muscle contracts more vigorously, allowing an increase in myocardial work.

---

* Assistant Professor of Medicine, University of South Carolina School of Medicine, Veterans Administration Hospital Enclave, Columbia, S. C. 29201.

Unfortunately, this increase in sympathetic output has several deleterious effects. Myocardial oxygen consumption increases because of the faster heart rate and because of the increase in myocardial contractility. Enhanced venous return to the heart can overload the pulmonary circulation when the left ventricle is compromised. An increase in arterial resistance means increased resistance to ejection, or afterload, against which the diseased ventricle has to work. If the abnormal increase in filling pressure (leading to pulmonary vascular congestion) and the increased impedance to left ventricular ejection (leading to a decrease in cardiac output) could be avoided, cardiac output could be expected to be maintained, or even enhanced, with a subsequent decrease in symptoms. Vasodilator drugs are used to favorably alter the hemodynamics of this abnormal circulatory state.

Ventricular preload can be affected in several ways. First, absolute changes in intravascular volume may occur: net volume reduction, with phlebotomy or diuretics; or volume expansion, with such agents as intravenous Dextran or Albumin. Secondly, volume can be redistributed. A classic way to redistribute volume is the use of rotating tourniquets in pulmonary edema. Pharmacologic agents, such as nitroglycerin, can redistribute venous volume as well. Next, an increase in myocardial contractility can decrease the left ventricular end-systolic volume, thus reducing left ventricular filling pressure or preload. Similarly, a reduction in impedance to ejection can reduce end-systolic volume.

Aortic impedance is dependent on compliance of large arteries, total peripheral vascular resistance, blood viscosity and intra-arterial volume. Of these, arterial compliance and systemic vascular resistance are the more important. Clinical determinants of afterload include systolic pressure and heart size (ventricular radius). Reduction in these parameters, with subsequent afterload reduction, can facilitate ventricular emptying, enhance stroke volume, and decrease myocardial oxygen consumption. As can be seen in Fig. 2, the ventricular function curve in heart failure (CHF) is quite depressed initially. The use of a diuretic can relieve pulmonary congestion but does little to increase cardiac output (in fact actually reduces cardiac output somewhat). The use of digitalis alone increases cardiac output for a given filling pressure, but does little to relieve the symptoms of pulmonary congestion. Nitroprusside functions as both a preload and an afterload reducer.[3] Preload reduction allows relief from pulmonary vascular congestion, and afterload reduction allows an increase in output to occur. Specific afterload reducing agents include nitroprusside, hydralazine and prazosin.

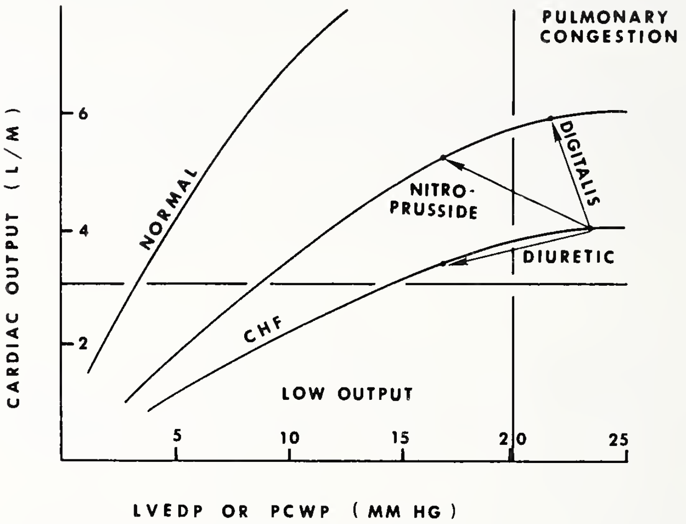

FIGURE 2. Frank-Starling relationships in CHF. For clinical purposes, LVEDP or PCWP (as measured with a Swan-Ganz catheter) relects myocardial fiber stretch; cardiac output reflects myocardial work. Hemodynamic effects of various therapeutic interventions are diagrammed. LVEDP = left ventricular end-diastolic pressure. PCWP = pulmonary capillary wedge pressure. CHF = congestive heart failure.

Sodium nitroprusside is given intravenously, and care should be taken to see that the initial dosage does not exceed 15 micrograms per minute. Pulmonary capillary wedge pressure (a reflection of left ventricular end-diastolic pressure) and arterial pressure must be monitored directly. A Swan-Ganz catheter and an indwelling arterial line are used. Ideally, cardiac output is measured by the thermodilution technique. Nitroprusside should cause a decrease in pulmonary capillary wedge pressure, an increase in cardiac output, and little or no change in systemic arterial blood pressure. The dose may be gradually increased by increments of 10-15 micrograms every 3-5 minutes until the hemodynamic response is adequate. If arterial pressure drops abruptly without a significant improvement in pulmonary capillary wedge (or increase in cardiac output) therapy should be temporarily discontinued and the pulmonary capillary wedge pressure checked to be sure that left ventricular filling pressure is adequate. Preload is "set" at 15-18 mm Hg pulmonary capillary wedge pressure to maintain optimum cardiac output. If the preload (left ventricular filling pressure) is low, a decrease in cardiac output will predictably occur with nitroprusside.

If the nitroprusside solution is not freshly made (within four hours), or if the solution is exposed to light, inactivation may occur. Care must be taken to insure that the patient receives the proper dose of the active drug.

Several complications may be associated with nitroprusside therapy. Unexpected sudden hypotension usually responds to discontinuance of the IV drip and leg elevation.

Nitroprusside is metabolized by the liver. Potentially toxic metabolites (including thiocyanate) are excreted in the urine. The drug must therefore be used carefully in face of hepatic disease and/or renal insufficiency. In the dosages used for afterload reduction, however, the chance of cyanide toxicity is very small. Long-term use of nitroprusside can lead to hypothyroidism and can interfere with vitamin B_{12} metabolism.

Hydralazine seems to act primarily on the systemic arterioles, producing systemic arteriolar dilation with subsequent reduction in systemic vascular resistance. The dosage ranges from 10-100 mg four times a day. An increase in cardiac output is usually noted with little change in preload or symptoms of passive pulmonary congestion.

Prazosin, in doses of 1-5 mg tid, acts both on afterload and preload.[4] Long-term reduction of symptoms of pulmonary congestion, with a decrease in left ventricular filling pressure; and increased cardiac output, with reduction in systemic vascular resistance, has been documented.

It is extremely important to note the relationship between blood pressure, cardiac output, and systemic vascular resistance. This is shown in Fig. 3. Critical to the use of afterload reducing agents is the understanding that the blood pressure per se is not treated. Rather, the inappropriate increase in systemic vascular resistance is attacked. When vasodilators reduce the vascular resistance, cardiac output increases, and blood pressure remains virtually the same.

Primary venodilators include nitroglycerin and the longer-acting nitrates. These agents are effective in relieving pulmonary vascular congestion. Nitroglycerin, usually given sublingually, lowers left ventricular end-diastolic pressure without raising cardiac output. This agent should not be used in the face of a low left ventricular filling pressure, i.e., when the pulmonary capillary wedge pressure is less than 15 mm Hg, in order to avoid a further reduction in end-diastolic pressure, stroke volume, and subsequent reflex tachycardia. The action of isosorbide dinitrate is similar to that of sublingual nitroglycerin, with its major effect being a reduction in left ventricular filling pressure. The hemodynamic effects last approximately 4-5 hours following oral administration of isosorbide.

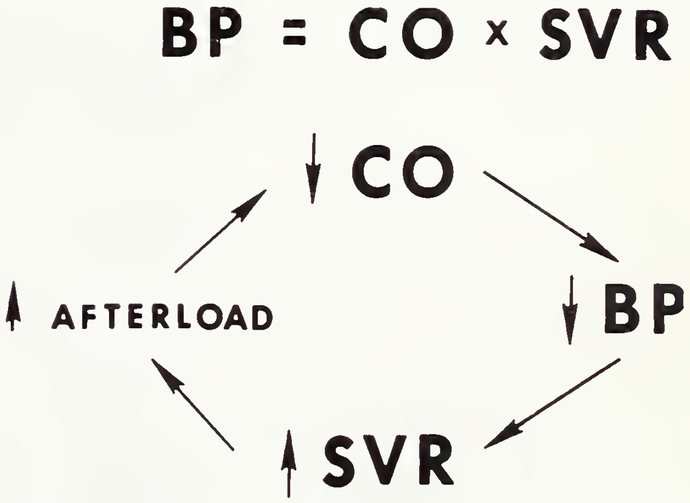

FIGURE 3. Blood pressure is directly related to cardiac output and systemic vascular resistance. A decrease in cardiac output results in a decrease in blood pressure, causing a compensatory increase in systemic vascular resistance in an attempt to maintain blood pressure. Unfortunately, the increased systemic vascular resistance increases afterload, often resulting in a further decrease in cardiac output. BP = blood pressure. CO = cardiac output. SVR = Systemic Vascular Resistance.

SUMMARY

Traditional therapy for heart failure has consisted of salt restriction, digitalis, and diuretics. Analysis of the pathophysiology of heart failure reveals that left ventricular filling pressure is often inappropriately high, causing pulmonary vascular congestion; and that systemic vascular resistance is often inappropriately high, causing an increase in aortic impedance to ejection which further reduces cardiac output. Vasodilator drugs block the effect of pathophysiologic reflexes and allow hemodynamic improvement at little or no energy cost to the heart. Venodilators allow relief of pulmonary vascular congestion; and arteriolar dilators allow afterload reduction by reducing impedance to left ventricular ejection, resulting in improved cardiac output (table 1). □

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TABLE 1

DRUG	INITIAL DOSAGE	FREQUENCY	ROUTE	DURATION	HR	BP	CO	SVR	PCW*
Nitroprusside	15 μg/min	Titer	IV	10 min.	=	↓	↑	↓	↓
Nitroglycerin	0.4 mg	5 min.	Sl	½ hr.	=	↓	=↑	=↓	↓
Isosorbide	10 mg	4 hrs.	Oral	4 hrs.	=	↓	=↑	=↓	↓
Hydralazine	10 mg	6 hrs.	Oral	6 hrs.	↑	↓	↑	↓	=
Prazosin	1 mg	8 hrs.	Oral	8 hrs.	=	↓	↑	↓	↓

=	No Change
↓	Decrease
↑	Increase
IV	Intravenous
Sl	Sublingual
HR	Heart Rate
BP	Blood Pressure
CO	Cardiac Output
SVR	Systemic Vascular Resistance
PCW	Pulmonary Capillary Wedge Pressure

* Initial PCW must be 15 mm HG or higher to avoid hypotension with vasodilator therapy.

CORONARY HEART DISEASE RISK FACTORS IN COLUMBIA, SOUTH CAROLINA AREA MALES*

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The Multiple Risk Factor Intervention Trial (MRFIT) is a cooperative research study currently underway at 20 clinical centers around the United States. Its central purpose is to test the efficacy of lowering the major risk factors relative to the prevention of coronary heart disease (CHD). The rationale for the study[1] and the statistical design considerations[2] have been published elsewhere.

The study protocol required each clinical center to recruit approximately 600 men, between the ages of 35-57, who were at high risk for the development of coronary heart disease. High risk men who met study criteria and who volunteered were randomly assigned into Usual Care (UC) or Special Intervention (SI) groups and are currently being followed for risk factor status and development of CHD for a six-year period ending approximately February, 1982. Those in the UC group are referred to their usual source of medical care for followup. The SI group received additional help from the clinical center staff in smoking cessation, diet modification, weight reduction and blood pressure control.

This paper will report on recruitment, screening activities, and risk factor levels of men at the Columbia, S. C. MRFIT center and will examine the implications of these data for the clinician. The Columbia center is located at the University of South Carolina in the College of Health and Physical Education.

METHODS

To be eligible for the study, protocol required that men (aged 35-57) be in the upper 10% of risk for CHD. This risk was calculated by using the Framingham study's multiple logistic equation which is based on number of cigarettes smoked per day, serum cholesterol, and diastolic blood pressure. Data for calculation of the risk score were obtained from a primary screen consisting of three items. First, a brief questionnaire was used to ascertain age, whether the participant was currently taking medication for diabetes, had ever been hospitalized for two weeks or more for a heart attack, and whether he planned to move from the area within a year. Secondly, a blood sample was drawn for serum cholesterol determination. Serum cholesterols were analyzed in a local laboratory under quality control monitoring by the Lipid Standardization Laboratory at the Center for Disease Control, Atlanta. Finally, three blood pressure readings were obtained following a detailed protocol which included a five minute seated rest period prior to measurement and two minutes between measurements. Technicians were trained in the procedure in a standardized way using detailed instructions and tape recordings of Korotkoff sounds. Similar tapes were used to test technicians to certify them for blood pressure measurements. A hearing test was also administered. Quality control was maintained by observation by the leaders of screening teams and central monitoring of blood pressure data by the MRFIT Coordinating Center at the University of Minnesota. Periodic testing and recertification of all blood pressure technicians was conducted. The second and third diastolic blood pressures were averaged for use in the analyses presented in this paper.

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* From the University of South Carolina, Columbia, S. C. 29208. This work was supported by a contract from the National Heart, Lung, and Blood Institute (NO1-HV-42932 NHLBI).

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Screening was done over approximately a 15-month period (August 1974-October 1975) in Columbia and the Midlands area of South Carolina. A majority of our participants were screened at their place of employment. Examinations were also done at a drop-in clinic in response to media announcements to the community. We estimate that approximately 8-10% of the total screened came from this clinic. In the latter phases of screening, door to door interviewers in selected census tracts in the Columbia area recruited approximately 20% of the total screened. We estimated that there were approximately 45-60,000 age-eligible men residing in the area to be screened. Our final number screened approached 15,000, or 20-33% of those eligible. We believe that our screened population is reasonably representative of men of the same age in the Columbia area for the following reasons: We screened a relatively large percentage of those eligible, used census tracts, worked in a variety of business and governmental units, and issued community-wide appeals via mass media.

RESULTS

Demographic data for the 14,356 sampled are presented in Table 1. Eighty-three percent were white. The average age was 45.3 years and did not differ by race. Only a small percentage had been hospitalized for a heart attack or were taking medicine for diabetes. There appears to be a higher prevalence of diabetes in non-whites, and a higher prevalence of myocardial infarctions in whites. Both of these differences were statistically significant ($p < .001$).

Data on the three major risk factors for CHD are presented in Table 2. Average daily cigarette consumption and serum cholesterol levels were somewhat higher in whites. Diastolic blood pressures (DBP) were higher in non-whites. Approximately 19% of the non-whites had DBP above 100mm Hg compared to 7.2% for the whites. Although the average daily cigarette consumption was greater in whites, more whites were non-smokers. All differences were statistically significant ($p < .01$).

As shown in Table 3, there appeared to be different patterns of reported cigarette smoking. While a greater percentage of non-whites smoked, the non-white smokers smoked less than did white smokers. Eighty-five percent of the non-white smokers consumed only one package or less of cigarettes per day but approximately fifty percent of the white smokers consumed two or more packs a day.

A comparison of risk factor data from our clinic and national MRFIT data is presented in Table 4. The national data are not partitioned by race. The national sample was 89.88% white, and 10.12% non-white. Both non-white and white men in Columbia had somewhat lower serum cholesterol values than the national sample. Columbia non-whites had higher DBP than the national sample. Columbia whites smoked more cigarettes than the national sample.

Risk factor values for the 25th, 50th, 75th and 90th percentiles are presented in Table 5.

A comparison of men with DBP $\geqslant$ 95mm Hg by race and national data from the Hypertension Detection and Follow-up Program (HDFP)[3] is presented in Table 6.

DISCUSSION

Although testing the value of risk factor reduction in a group of high risk, middle-aged males who were free of CHD at entry into the study is an important undertaking, MRFIT will not answer all questions related to various living habits (life-style) and causation of CHD. Stamler[4] stated that the "ideal" experiment would be an induction experiment in which infants were randomized into two different life-styles. One group would be forced to adopt living habits such as cigarette smoking and a diet rich in saturated fat and cholesterol. The experimental group would be forced to follow living habits thought to be consistent with the prevention of CHD. After several decades, mortality from atherosclerotic diseases could be compared in the groups, and a definitive answer could be given.

It is obvious that such an experiment is neither feasible nor ethical. We are faced with the reality that we must make decisions and recommendations about living habits and CHD based on current observations. A search of the professional literature over the past few years yields numerous reports and editorials which suggest that we already have enough information to recommend life-style changes in an effort to reduce the impact of CHD.[5, 6, 7, 8]

Table 1

Demographic Data

	Number	(%)	Age Mean	Age SD	Medication for Diabetes Number	Medication for Diabetes (%)	Hospitalized for MI Number	Hospitalized for MI (%)
Non-White	2,440	16.9	45.2	7.0	87	3.6	18	.7
White	11,916	83.0	45.4	6.9	215	1.8	258	2.2
Total Population	14,356		45.3	6.9	302	2.1	276	1.9

Table 2

Three Major Risk Factors for CHD:
Levels, Standard Deviations, and Ranges

Risk Factor	Total Columbia Sample Mean	Total Columbia Sample SD	Total Columbia Sample Range	Whites Mean	Whites SD	Whites Range	Non-Whites Mean	Non-Whites SD	Non-Whites Range
Cigarettes/day	11.7	15.7	0-99	12.2	16.5	0-99	9.1	11.1	0-80
% non-smokers	54.8			56.5			46.3		
Serum cholesterol mg/dl	210.9	41.2	68-820	211.2	40.2	68-820	209.2	45.6	82-764
Diastolic Blood Pressure mm/Hg	84.8	11.1	34-151	84.0	10.4	34-143	89.0	13.1	47-151

Table 3

Cigarette Smoking Patterns

Packs/day	Whites %	Non-Whites %
0	56.5	46.3
1	19.0	45.8
2	20.7	7.3
3	3.4	0.5
≥ 4	0.3	0.0

Table 4

Comparison of Local and National
Risk Factor Data

Risk Factor	Columbia Non-Whites Mean	Columbia Non-Whites SD	Columbia Whites Mean	Columbia Whites SD	National* Mean	National* SD
Serum Cholesterol mg/dl	209.2	45.6	211.2	40.2	219.0	40.5
Diastolic Blood Pressure mm/Hg	89.0	13.1	84.0	10.4	83.9	10.7
Cigarette Smoking Cigarettes/day	9.1	11.1	12.2	16.5	9.5	14.9

*National MRFIT data on 366,287 men

Table 5

Risk Factor Values by Percentiles

Risk factor		25%ile	50%ile	75%ile	90%ile
Serum cholesterol mg/dl					
	Total Sample	184	207	234	260
	Whites	184	208	234	260
	Non-Whites	180	205	233	261
Diastolic Blood Pressure mm/Hg					
	Total Sample	77	83	91	98
	Whites	77	83	90	97
	Non-Whites	80	87	96	106
Cigarettes/Day					
	Total Sample	0	0	20	39
	Whites	0	0	20	39
	Non-Whites	0	3	19	20

Table 6

Percentage of Men with DBP $\geq$ 95 mm Hg

National data from HDFP*			Columbia MRFIT data		
age range	Non-White**	White***	age range	Non-White	White
35-39	24.7	10.8			
40-44	29.8	13.5			
45-49	30.7	16.8	35-57	30.8	16.1
50-54	32.5	16.7			
55-59	31.3	16.0			

*HDFP = Hypertension Detection and Follow-up Program (3)
**N = 9,964
***N = 34,547

This emphasis on changing habits for disease prevention has also received considerable publicity in the mass media. It has been demonstrated in the Stanford "Three Community Study"[9] that this approach to public health education can have a measurable impact on risk factor levels in the community. In view of these facts, it is hardly surprising that there have been apparent changes in the major risk factors in the American public. Stamler[4] has presented an extensive analysis of trends in risk factors over the last 25 years.

It is impossible to make direct comparisons of trends in risk factors in the Columbia study since we have no good data on similar population groups from the past. It may be useful, however, to compare data from the current study with data from previous groups in various areas of the United States.

It is clear that there has been a change in the smoking habits of adult American men. Reports from the Public Health Service on national probability samples indicate that there has been a decline in the prevalence of cigarette smoking in adult American males from 1964-1975.[10] This decline was from 52% to 39% for a reduction of 25%. Since we do not know the prevalence of smoking in the past that existed in the group comparable to the one reported in this paper, we can draw no inference regarding the changing of cigarette smoking habits in Columbia. Our total sample had a smoking rate of 45.2%. The best comparison with the national data is for the age ranges 35-54, which had a smoking rate of 44.1% in 1975. Thus, it appears that the men in our sample do not differ markedly in reported smoking habits with their national peers.

There have been extensive changes in Americans' dietary patterns in recent years. Reductions in dietary cholesterol and saturated fat and increases in polyunsaturated fat have resulted in reductions in serum cholesterol in several populations that have been studied.[4] Early epidemiological studies in the United States found serum cholesterol values of 230-240 mg/dl[11, 12] for men in age ranges similar to those in this study. Serum cholesterols in our sample are markedly lower than these values, with only about 25% of our men having cholesterols above 238 mg/dl.

Data from our study agree rather well with data from HDFP.[3] The HDFP is a national community based trial with 14 clinical centers. Slightly less than ⅓ of the non-whites and approximately 16% of the whites had DBP's equal to or greater than 95mm Hg. The HDFP data indicate that there has been a marked improvement in the control of hypertension in the community. Earlier studies indicated that ½ of the hypertensives were unaware of their condition, only ½ of the aware hypertensives were under treatment and only ½ of those were adequately controlled. In the HDFP sample only 25% of the hypertensives were newly detected, 21% were previously detected but currently untreated, and 16% were currently treated but uncontrolled. However, 38% of the hypertensives in the HDFP were currently controlled in contrast to the 12-13% from earlier studies. Unfortunately, we do not have the data on our sample to classify these men as newly detected, untreated, or uncontrolled in respect to their hypertensive status, but they appear to be similar to the HDFP group in other respects.

There has been a dramatic decline in death rates in the United States over the past 25 years.[13] Total mortality has declined 23.7% and cardiovascular mortality has declined 29.7%.

Most of the decline in cardiovascular mortality has occurred since 1968. These findings are consistent for all race and sex groups. While many possible causes for the drop in cardiovascular mortality can be hypothesized, such as improved therapy or emergency care, a possible explanation appears to lie in changes in health related behaviors. It appears likely that the nationwide reduction in cigarette smoking, improvement in hypertension control, and reductions in serum cholesterol are at least partly responsible for an apparent reversal in the CHD epidemic. Although the data are somewhat limited, our study suggests that these national trends may also be present in South Carolina. Lest we become complacent, it should be mentioned that CHD is still the leading cause of death and many South Carolina men have one or more elevated risk factors.

Although health behavior change is frequently difficult, it is not impossible as evidenced by the favorable changes noted in several risk factors over the past few years. The old cliches "you can't change human nature," or "people just aren't interested in reducing their risk factors" are simply not true. We have an increasingly alert and well-informed American public and they are becoming much more interested in their health, and are willing to do something about it. It is the responsibility of health professionals, and especially the practicing physician to fuel this interest and to provide assistance.

Our data show that nearly half of the men surveyed were smoking cigarettes. Although this is perhaps better than previous levels of smoking, it is still far too much. Every single smoker should be warned in specific terms about the dangers of continuing the habit. Most communities have additional resources to which the smoker can be referred for assistance. The voluntary health agencies concerned with cancer, lung disease and heart disease are good examples. School health and public health educators could also be enlisted as professional counselors in community smoking control programs.

Many hospital nutrition services will conduct out-patient behavior change classes for diabetics, weight reduction, and cholesterol lowering. Physical educators and health educators may also contribute to multidisciplinary team approaches in dealing with diet and exercise habit change.

Community leaders, members of the press, radio and TV commentators could be effectively employed in community efforts in risk reduction through positive health behavior change.

All the components are in place: 1) an informed and concerned public who want to practice preventive medicine, 2) health professionals who have the interest and ability to help with these efforts, and 3) the need to continue health behavior change with a view to further reducing the impact of major disease problems. Local practicing physicians, as respected leaders and health care providers, are ideally situated to be the catalysts to initiate mass community efforts. Physicians have the responsibility, credibility, and authority to actively encourage their patients and their communities to adopt life-style changes to minimize CHD risk factors. □

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REDUCTION MAMMAPLASTY

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FORDE A. McIVER, M.D.**

Large, heavy, pendulous breasts are associated with many serious symptoms and problems the relief of which is most gratefully appreciated. This mass of tissue, suspended as it is from the upper anterior chest wall puts constant traction on the shoulders and cervical spine resulting in poor posture associated with pulling forward and downward of the shoulders and pain in the cervical and dorsal spine. (Illustration 1) Depending upon the weight of the breast masses and the supportive strength of the skin envelope the breasts may extend well down over the abdominal wall much like balloons partially filled with water. The very weight of these masses of tissue may interfere with normal breathing. The suspension of these weighty organs by a brassiere is attended by intense pressure on the shoulders as evidenced by soft tissue depression beneath the straps. It is necessary for occasional patients to wear a brassiere at night to avoid painful pressure. The skin beneath the breasts often becomes chronically irritated especially in warm weather. It is not unusual for these breasts to be painful and to have greatly enlarged nipples and areolae of markedly reduced sensitivity. It is usually impossible to be fitted with clothes off the rack and the wearing of a bathing suit or participation in sports is almost always avoided.

Examination of the breasts for masses is most difficult in this expanse of tissue. A tumor usually must grow to considerable size to be recognized. The large resected breast specimen also presents a problem in this regard. In selecting sites for histologic study, an additional safeguard may be provided by the use of xerography on resected specimens.

It is of little wonder that these women whose "Badge of Feminity" has become so burdensome are seeking relief in ever increasing numbers. To these women a dependable operative procedure can now be offered associated with a reasonable anesthesia time, minimal blood loss, and a short period of hospitalization. Relief of most symptoms is usually immediate. Symmetrical breasts of good contour, however, can be obtained only with detailed planning and meticulous measurements both before and during the surgical procedure.

A review of our last thirty cases of reduction mammaplasty utilizing a questionnaire revealed the following information:

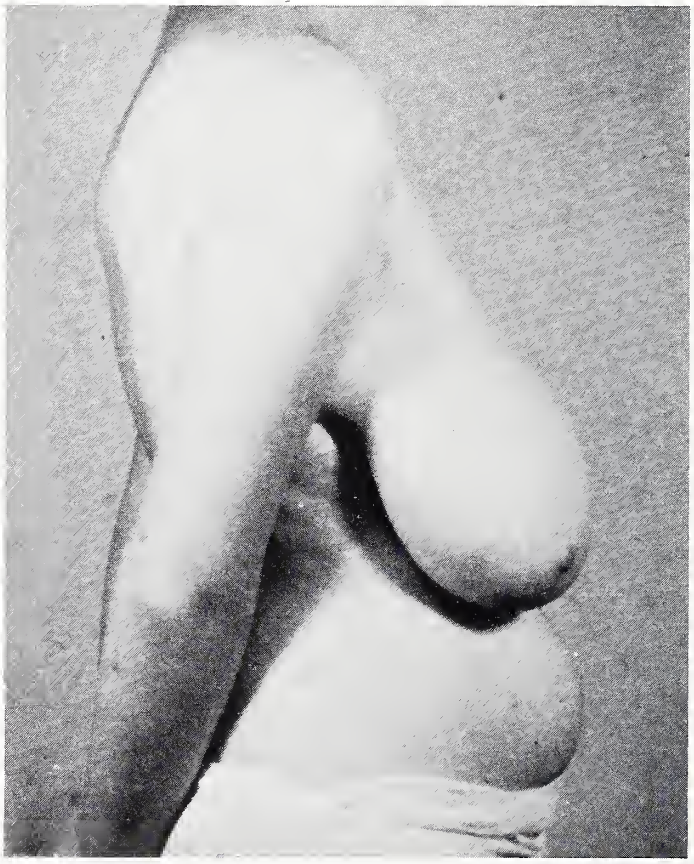

Illustration #1
This typically poor posture resulting from the suspended weight of large, heavy, pendulous breasts produces obvious abnormal stresses on the cervical and dorsal spine in addition to the shoulders.

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A. Complaints in order of their severity prior to surgery:

1. Back pain.
2. "Cutting in" of brassiere straps.
3. Neck pain.
4. Inability to be fitted with regular clothing.
5. Interference with activities.
6. Necessity of wearing a brassiere at night.
7. Dermatitis beneath breasts.
8. Interference with breathing.
9. Breast pain.

B. Factors in judgement of the results of surgery in order of importance to patient after surgery.

1. Relief of symptoms.
2. Improvement in appearance dressed.
3. Improvement in appearance undressed.
4. Appearance of scars.
5. Sensation of areolae and nipples.
6. Symmetry.

C. The great majority of the patients were well satisfied with both the size and symmetry of their breasts and the resulting scars following surgery. The relatively unimportant significance given to sensation of the areolae and nipples in the patient judgement of the results is probably associated with the preoperative condition. In asking one patient about the sensation of her nipples and areolae postoperatively she replied "not much" and in response to the question of sensation before surgery, her reply was "none." In general sensation was about the same postoperatively as preoperatively in about one half of the patients. The remainder were almost equally divided into better or worse sensation. Of the group of patients who reported improved sensation in the nipples and areolae postoperatively, it was interesting to note that the great majority had free grafts. On the other hand, of those reporting decreased sensation of the nipples and areolae postoperatively, an equal distribution of pedicled flaps and free grafts were found. Only one patient reported dissatisfaction with the overall result.

Success in this surgery depends to a large extent on careful preoperative planning. In accordance with the height and weight of the individual and the proportions of the thoracic cage the size of the breast is determined together with the appropriate position of the nipple and areola. Following sharp incision of the skin and subcutaneous tissues, the breast itself is cut with the cautery greatly reducing blood loss and operating time. This is most important in order to minimize postoperative complications. Depending upon the size or configuration of the breasts either pedicled flaps or free grafts are utilized in the transference of the nipple-areola complex. In the very large breasts in older patients the free graft technique is almost always utilized whereas in the younger women with smaller breasts pedicled flaps are usually relied upon. Incisions are limited to the inframammary line, the circumareolar margin, and the midline beneath the areola to minimize their visibility.

Examples of these large, symptomatic breasts and their surgical correction are seen in the following illustrations. (Illustrations 2, 3 & 4).

CONCLUSION

In surgery of this dimension involving extensive dissection and transfer of tissues either by pedicle or free graft there are all the usual possibilities of postoperative hemorrhage, infection, and tissue loss. In addition, in paired organs, asymmetry may result. However, such complications are rare with careful planning and experienced technical execution.

It is interesting that the majority of our patients have been referred by other patients. Some had never heard of the operation or known that anything could be done about their condition until a friend told them about it. Others never realized that the associated problems of chronic fatigue, backaches, neck aches, and a feeling of not being up to par were being caused by their hypertrophied breasts and were quite surprised with these added benefits of surgery.

Reduction mammaplasty is carried out primarily for the relief of symptoms. However, it is perfectly natural that a woman should prefer that her hypertrophic breasts be replaced by more normal appearing ones in keeping with her self-image. In this regard the woman with the optimal height to weight ratio will have the optimal result. □

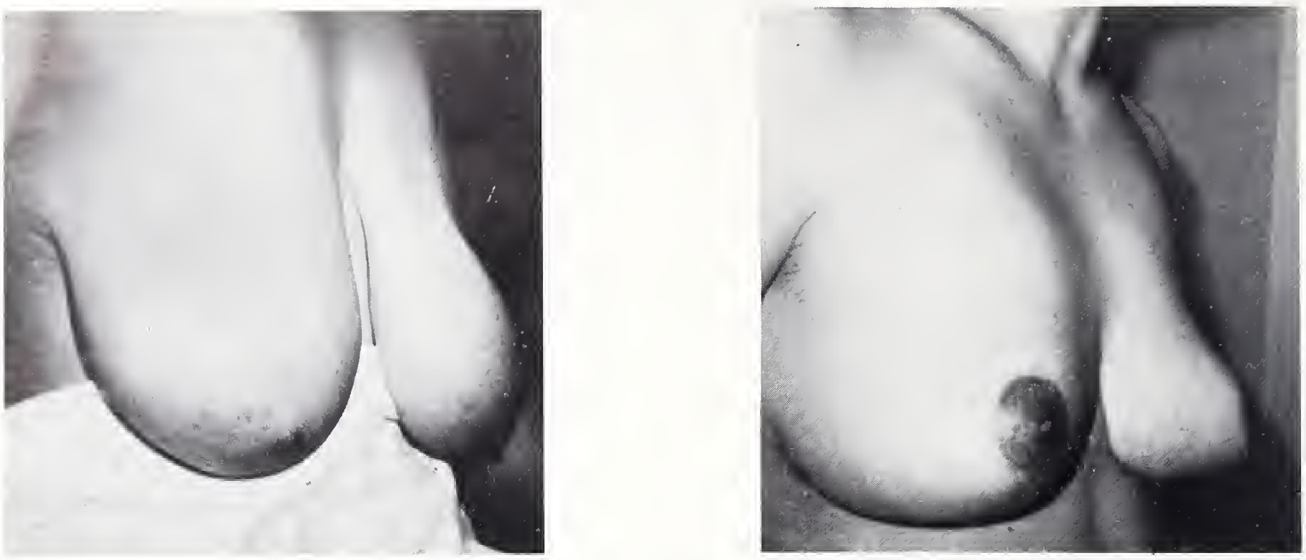

Illustration #2

35 year old, 5′ 2½″, 135 pounds in weight. Recent weight loss of 35 pounds but no loss of weight in breats. The breasts became greatly enlarged with pregnancies and the symptoms increased with the passage of time. Rx: Removal of 16 oz. of breast tissue from each side, free grafting of areola-nipple complex.

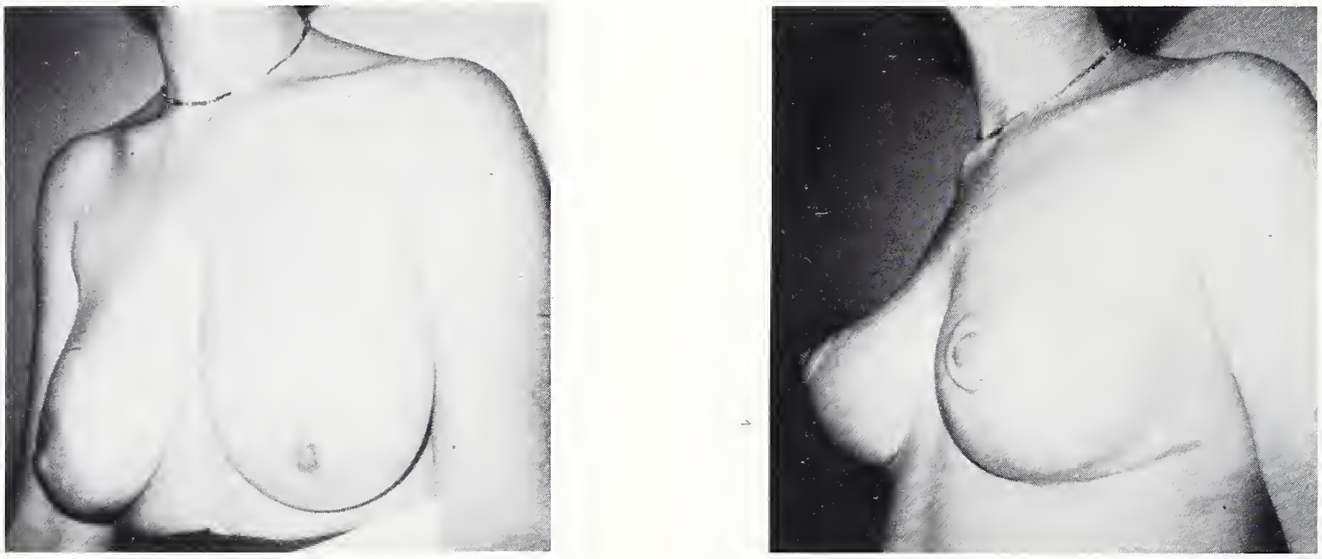

Illustration #3

34 year old, white female 5′ ½″ in height, 100 pounds in weight. Breasts large, pendulous and ptotic. Rx: about 4 oz. of tissue removed from each side, with free nipple and areolar grafts.

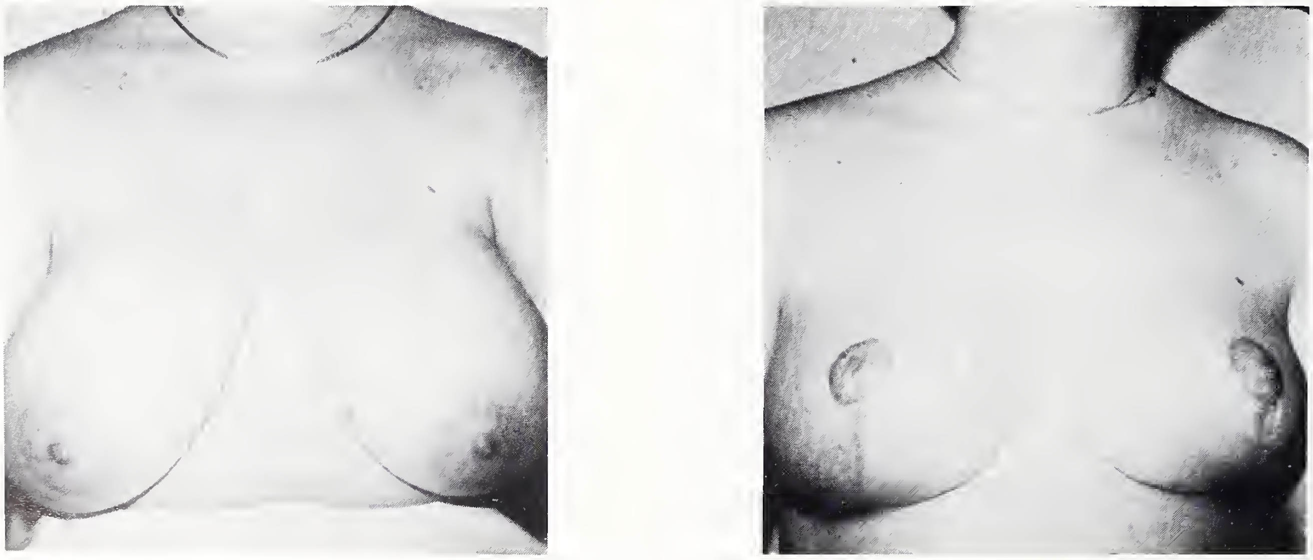

Illustration #4

20 year old, 5′ 2½″ in height, 135 pounds in weight. Rapid growth of breasts since age 15 with the usual symptomatology including painful breasts during menstruation. Rx: Reduction of 21 oz. (rt.) and 18 oz. (lt.), free nipple grafting with alleviation of all symptoms.

PSRO AND LONG-TERM CARE REVIEW*

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The South Carolina Medical Care Foundation, a Professional Standards Review Organization, has been operational in monitoring the delivery of health care in South Carolina since July 1, 1974. The program, as established via Public Law 92-603 has, for the most part, functioned in the acute health care area. While functioning there, the Foundation routinely conducts concurrent reviews of medical care, retrospective Medical Care Evaluation Studies and analyzes medical profiles on a statewide basis.

More recently, the Foundation has enthusiastically moved into the long-term care area in an attempt to perform basically the same functions that are performed in the acute care area. There appears to be some confusion on the part of physicians, nursing home administrators, allied nursing home health professionals, Medicare beneficiaries, Medicaid recipients and the families of the patients as to the exact role of the PSRO in the Long-Term Care area. The purpose of this paper is to define the role and functions of the PSRO in the Long-Term Care area, some potential strengths and weaknesses of this involvement and the potential impact of the PSRO program in this particular area of the health care system.

The delegation of review authority of the PSRO was established on September 1, 1977, for those persons receiving Medicaid assistance and January 1, 1978, for those persons receiving Medicare benefits while in a long-term care facility. The review authority extends to give to the PSRO the right to determine that the health care services being rendered are medically necessary, appropriate and are of a quality consistent with standards established by practicing physicians within the PSRO area. These standards are established by a standing committee known as the Long-Term Care Committee. This Committee is comprised of 14 physicians currently involved in the long-term health care of patients. The 14 members of the committee are selected from persons recommended to the Foundation by facility administrators, with each region of the state being represented.

PSRO CONCURRENT REVIEW ACTIVITIES

The concurrent review of patients is accomplished at the time of admission to a facility and at regular intervals during the stay. The major purpose of this review is to certify that persons are receiving necessary and appropriate health care. Since level of care criteria have been established which prescribe the level of care to be given, the review process is an attempt to ascertain that the patient is receiving the health services necessary. The levels of care are designated as either skilled nursing care or intermediate health care. Skilled level nursing service is furnished by or under the direct supervision of licensed nursing personnel and under the general direction of a physician on a daily basis. Intermediate level care nursing services are those which do not require daily, direct skilled nursing services or management of an aggregate of unskilled services on a daily basis. The designation process is routine and should not create any problems or criticisms except for when PSRO level of care decisions appear to conflict with level of care assessments made by nursing home personnel. In many instances, this conflict of opinion is energized because the patient is coming to the long-term care facility directly from an acute care institution. In the minds of many, it is unreasonable to expect that a person can come from an acute care institution and not be considered as a skilled nursing care patient. Perhaps a solution for this problem lies in closer coordination between the acute and long-term care facilities, whereby, the discharging hospital Physician Advisor could certify the pre-admission level of long-term care, as ordered by the attending physician thus eliminating admission certification by the PSRO. This procedure would eliminate conflicting PSRO level of care determinations by Physician Advisors in acute care and long-term settings.

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This process would necessitate familiarization of PSRO long-term level of care criteria by attending physicians, Physician Advisors and Coordinators in hospitals.

Patients are also reviewed periodically during their stay to insure they are receiving necessary, appropriate and high quality health care. During the review process, it may be determined that the services being provided do not meet the level of care criteria resulting in a change in the certification. One realized effect of PSRO review is that nursing home facilities are improving in both physician and nurse documentation of the care rendered and problems encountered by the patient. It is hypothesized that the improvement in documentation is based upon the fact that level of care designations are based upon medical record reviews which can indicate only the technical quality of the health care being rendered. This improvement in documentation is viewed as a significant positive change.

The concurrent review process does exist as a cost containment procedure which will not or cannot be denied. It is unfortunate, however, that many persons see this as the only reason for its existence when, in actuality, the review process is an attempt to make sure the patients are receiving the type and quality of care to which they are entitled.

LEVEL OF CARE RECONSIDERATIONS

It would be unrealistic to assume that level of care changes are always going to be met enthusiastically. There does exist a procedure through which either the patient, physician, nursing home administrator or other interested party can challenge PSRO level of care decisions. Within specified geographic areas, a person exists referred to as a physician advisor. The Physician Advisor (P.A.) will review patient medical information as documented in the medical record and attempt to retrieve additional medical information from the attending physician prior to rendering a determination that the services requested for the care of a patient are not medically necessary, that the patient is not appropriately placed or that the care does not meet the standards established by the medical community. The P.A. will notify the patient's attending physician relative to any reclassification decisions.

It is expected that the attending physician or others may occasionally disagree with the P.A. and wish to challenge level of care determinations. Reconsideration hearings are held for this particular purpose. Presently, reconsideration hearings are conducted at Foundation headquarters in Columbia, S. C. The patient's records are sent and a date is set for concerned parties to present written and/or verbal information concerning the patient. A final decision is arrived at by a panel of three physicians after hearing and reviewing each case. This decision is considered final unless a secretarial hearing is requested or the patient's medical condition changes to cause a reconsideration of a patient's level of care status.

MEDICAL CARE EVALUATION STUDIES

Another function of the Foundation relative to reviewing long-term care involves conducting and supervising Medical Care Evaluation studies (MCEs). These are retrospective studies done in a particular medical topic, with a particular patient population over a specified period of time. Many times the MCEs are referred to as medical audits.

The primary function of audits is to insure that the quality of care being rendered meets acceptable levels. During the initial stages of PSRO long-term care review, the Foundation provided technical assistance to fully delegated nursing homes for setting up audit committees, selecting topics, establishing criteria, conducting the studies and reporting the findings. For those institutions designated as non-delegated for PSRO review, the Long-Term Care Committee and Regional Audit Committee performed the Medical Care Evaluation studies.

Beyond the reporting of results which indicate type and quality of care rendered, there exists another real advantage to utilizing MCEs. If in the conduct of the audit, medical deficiencies are detected in the quality of care rendered, those deficiencies can be useful in prescribing programs of continuing medical education (CME). These findings allow for programs to be established based upon real medical problems, as opposed to perceived problems and needs. As the medical community, whether functioning in an acute care or long-term facility, begins to see the audit as an educational tool as opposed to a punitive measure, the acceptance and worth of the audit increases. As audit findings become increasingly used to underpin educational programs to modify physician performance, the resultant quality of health care rendered should be improved.

IMPACT OF REVIEW ACTIVITIES

As a result of PSRO review activities, approximately 55 reclassifications are made each month. This figure represents: (1) level of care changes from skilled nursing care to intermediate nursing care, (2) level of care changes from intermediate to skilled nursing care, (3) level of care changes to less than intermediate care, and (4) termination of Medicare benefits. The bulk of reclassifications are from skilled nursing to intermediate care.

The identification of increasing numbers of patients who require services in a facility other than where they currently reside has prompted the cooperation of various agencies to study the need for bed conversions. The current mix is about 65% skilled nursing and 35% intermediate care beds in S. C. The anticipated ideal mix has been estimated to be the opposite. Efforts to persuade nursing home administrators to voluntarily convert beds are being made; if voluntary efforts are not effective, the imposition of a mandate could be expected.

SUMMARIZATION

In spite of the intensive and varied efforts to educate physicians about the role and function of the PSRO in the health care delivery system, there exists a relatively wide-spread misunderstanding about the PSRO in the long-term care setting. Physicians are not willing to attend workshops because of their already burdened schedules. When the PSRO staff has discussed the program on a one-to-one basis, questions have been answered and confusion reduced. It is not possible, however, to provide this contact to all of the approximately 3,000 physicians in the state.

With the implementation of PSRO, the large number of inappropriately placed patients has been emphasized. This has resulted in various criticisms about the PSRO criteria, specifically: (1) that Medicare level of care definitions have been imposed on Medicaid recipients, (2) that the PSRO is concerned only with cost containment and is not concerned about the patient's welfare, (3) that the PSRO is operating on a quota system to reclassify patients so that the current bed mix will be reversed.

It is hoped that the intent of this paper, which is to generally inform people about PSRO activities relative to long-term review, will be received positively. In a country where health care costs so much, health manpower is in a shortage and the population is increasing, it is important that sincere efforts be made to provide the best care to the most for the least money. The federally sponsored PSRO program exists to aid in the realization of this goal. ☐

LETTER TO THE EDITOR

To the Editor:

I read the case report and the guest editorial on Legionnaires' Disease which appeared in the August 1978 issue of the Journal of the S. C. Medical Association with great interest. I would like to inform the readers that both the serological testing for Legionnaires' Disease and the isolation of the Legionnaires' Disease Bacterium (LDB) are available at the S. C. Department of Health and Environmental Control Bureau of Laboratories.

During November and December 1977, we received 19 specimens (from Seneca to Sullivans Island) which were forwarded to CDC for testing. Since we developed the capabilities for serological testing in January of 1978, we have tested 41 sera from patients suspected of having this disease. Obviously the South Carolina physicians are considering this entity in their differential diagnosis of pneumonia. Either a four-fold rise in titer to at least 128 or a single titer of 256 or greater is considered indicative of recent infection with LDB.

Although we have the capacity to isolate the organism, we have not received appropriate clinical material to test our technique. Lung tissue or pleural fluid should be submitted. A direct fluorescent antibody test is available for examination of formalinized tissue. Those physicians or laboratories who wish to submit specimens for culture should contact Dr. Harold Dowda (758-8030) for specific instructions.

Those physicians who desire additional information on Legionnaires' Disease can request a copy of the January 1978 issue of the Bureau of Laboratories Newsletter on this subject. We are always available for consultation.

Arthur F. DiSalvo, M.D., Chief
Bureau of Laboratories, SCDHEC

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Precautions: Minor transient elevations of SGOT have occurred in a small percentage of patients. Therefore, this drug should be used with caution in patients with preexisting liver dysfunction.

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Editorials

VASODILATORS VERSUS DIGITALIS

> *"New medicines, and new methods of cure, always work miracles for a while."*
>
> — William Heberden

Not many years ago, as a medical student, the editor recalls the feeling of profound ignorance when the professor asked, on rounds: "Is this patient *adequately digitalized?*" Several years later, it occurred to the student that perhaps it had been the professor who had stood as the emperor without any clothes, that in reality the question "Is the patient adequately digitalized" is neither relevant nor ascertainable. Rather, the relevant and ascertainable question reads: "Is heart failure *adequately treated?*" In the intervening years, numerous investigators have pursued the mechanism of action of digitalis, and the meaning of digitalis serum levels, illustrating that we seldom if ever completely understand even the most time-honored of therapies.

Dr. Christie B. Hopkins, of the Division of Cardiology of the University of South Carolina School of Medicine, provides in this issue of *The Journal* a lucid explanation of the rationale for a relatively new mode of therapy for heart failure — *vasodilators.* Thinking of the heart's work in terms of *preload, afterload,* and *contractility* — parlance now used among cardiologists and in medical centers but perhaps largely foreign to many practitioners who trained prior to the 1970's — helps clarify the rationale behind current therapeutic options.

The rationale behind vasodilator therapy, as explained by Dr. Hopkins, seems so straightforward that what seems remarkable is *why* widespread use of such agents for critically ill patients took so long in coming. A recent editorial writer offered the following:

> "Why, then, has it taken so long for such drugs to be used in treating congestive heart failure? Perhaps physicians have had a reverence for the body's homeostatic reflexes, which is not appropriate when it comes to congestive heart failure. There has been a natural fear that the use of agents that lower the arteriolar resistance in a patient with a low cardiac output might result in a catastrophic drop in blood pressure. This is not the case, since when ventricular filling is adequate, the increased stroke volume resulting from the reduced afterload almost counterbalances the drop in peripheral resistance, and a substantial cardiac output increase can be achieved at the expense of only a small drop in arteriolar pressure. Patients with congestive heart failure are actually *more resistant* to the hypotensive effects of vasodilators than are normal persons."[1]

Another writer, comparing reduction of cardiac work (rest, sodium ion manipulation, diuretics, vasodilators) versus increasing myocardial contractility (digitalis), emphasizes that "digitalis is not always the primary treatment for congestive heart failure" and that "many patients with congestive heart failure can be managed without digitalis."[2]

It now seems clear that patient *profiling* — determining the relative needs for diuretics, digitalis, and/or vasodilators — pays dividends for *critically ill patients* being monitored in the intensive care unit setting. Less clear is the role of vasodilator therapy for outpatients. At the present, a conservative approach would emphasize the more traditional modes of therapy, reserving drugs which reduce afterload for those patients who remain refractory to more conventional and proven methods. The debate will continue. To recognize again the limitations of medical doctrine and dogma is humbling, but to see again the dividends of our profession's continual rethinking of old concepts is encouraging, refreshing, and stimulating.

— CSB

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HEART DISEASE, RISK FACTORS, STRESS, AND PHYSICIANS

> *"I got no blood pressure as I knows of: it ain't never been tuk. De most doctorin' I had is wid old folks's remedies. . . ."*[1]

Uttering the above words, recorded during an oral history project of the 1930's, was an ex-slave who was 110 years of age. She may have been blissfully unaware of "risk factors," but she recognized the value of hard work and of coping with stress.

In this issue of *The Journal*, Blair and colleagues report the findings of a systematic study of risk factors in the Columbia, South Carolina area. This and similar studies extend the pioneering work obtained in places such as Framingham, Massachusetts, and Tecumseh, Michigan, and provide data useful for counseling patients.

Our profession has been charged, quite often, with failing to educate the public. We argue that this is hardly the case, that seldom if ever has the public been so well-informed. Blair and his coworkers recognize the truism that "we have an increasingly alert and well-informed American public and they are becoming much more interested in their health and are willing to do something for it." Among our challenges is that of emphasizing the need to look toward scientific sources of information and to ignore those who would promulgate unproven theories for financial gain.

Blair and colleagues, however, give little attention in their article to another risk factor which seems increasingly important: emotional stress. This limitation of their study is quite understandable, since stress is exceedingly difficult to quantitate. Theirs is a large study. The study of stress may require analysis of life cycles, which remains difficult and time-consuming. Indeed, one notes that a much talked-about, recent study of the male life cycle in America focuses upon only 40 subjects.[2] It would be exceedingly difficult to use such data to offer generalizations about populations and "norm" groups.

An event occurring this month in South Carolina which deserves considerable publicity is the Second National Conference on Emotional

Stress and Heart Disease, being held at Hilton Head Island, October 13-15. The sustained efforts of many individuals — both physicians and others — in organizing these conferences also deserves our praise. Especially noteworthy have been the contributions of one of the conference's organizers, practicing cardiologist C. Warren Irvin, Jr. We now recognize that removal of "stress" would dramatically reduce the incidence of coronary heart disease. However, recognition of the stress-prone personality remains exceedingly difficult,[3] and intervention presents challenges of great complexity.

Physicians take special interest in stress as a risk factor in part because of the stressful nature of our own occupation. The obituary pages of *JAMA* provide a weekly reminder of the toll of cardiovascular disease among the members of our profession. Recognition of the role of stress in our lives is hardly new. The great English surgeon, John Hunter, knew that stress aggravated his angina and declared: "My life is in the hands of any rascal who tries me." Not surprisingly, he died after a debate precipitated during a hospital staff meeting.

Two centuries later, we find a study of stress in the operating room conducted among British surgeons. Their mean heart rate was 121 beats per minute with maximum rates over 150 per minute — a stress reaction which could be prevented by prior beta-adrenergic blockage.[4] Although the authors debate the implications of these findings, the overall message seems clear. We should extend the systematic study of risk factors to include stress, seek objective measures, and use such information as might be obtained for the benefit of our patients — and ourselves.

— CSB

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TUBERCULOSIS IN COMMUNITY HOSPITALS — LESSONS FROM ANOTHER YEAR

> *"Identify this disease. The mortality rate from the disease was 200 to 300 persons per 100,000 population. It was widespread. It was in first place on cause-of-death lists. Many people in their prime were struck down. Treatment was only partially effective; nature did most of the work. Doctors recommend diet and exercise – how much of this or that to eat or not to eat, rest and exercise, so and so much of each. Special hospitals had been built for this disease, and doctors were trained to spend the greater part of their time in managing its many manifestations. Inevitably, operation was introduced to treat the disease in special severe cases. However, it remained clear that the doctors did not know the cause of the disease, and when they did find the cause, they were as baffled as the patients in advising the proper thing to do for a cure."*[1]

The disease — in 1900 — was tuberculosis. Now it is arteriosclerotic coronary artery disease. The similarities are striking, and there are even more parallels. The incidence of tuberculosis began to decline well before specific therapies were at hand — much as the incidence of coronary heart disease seems to be declining at present. Recommendations for prevention of coronary heart disease, as found in the article by Blair and colleagues in this issue, remind us of former recommendations for management of the white plague. A further parallel is that our ability to cope with a disease often depends upon its prevalence in the community.

Today, in any community hospital, one can obtain a "stat electrocardiogram." One can usually obtain the most sophisticated and latest enzyme tests for evaluation of myocardial damage, and one can obtain access to cardiac monitoring. There is much interest in developing even better tests — myocardial radionuclide imaging techniques and still better enzyme tests which will enable one to "rule out" myocardial ischemia in the emergency room. By contrast, probably due to its relatively low incidence, there is little emphasis upon development of better, quicker methods for the diagnosis of mycobacterial disease, which is often exceedingly slow and frustrating. In theory, availability of purified mycobacterial antigens would enable the development of rapid methods for quick determinations of the presence or absence of *M. tuberculosis* in sputum and in body fluids and tissues. Only a handful of investigators pursue this problem.

In 1900, the sanatorium movement in South Carolina was just beginning. The movement to return management of most aspects of tuberculosis to the community hospital or to outpatient clinics has now swept much of the country and is gaining attention in our state. A recent report from the South Carolina Department of Health and Environmental Control noted that of the 1200 patients in our state being treated for tuberculosis, 92 percent were at home and only 8 percent were at the State Park Health Center, last of the six special hospitals for tuberculosis in our state. Fewer than one-half of all patients with tuberculosis now enter the State Park facility. The report, which received attention in the lay press, stated that a pilot program of hospitalization in the general hospital system should be initiated.

An employee of the State Park Health Center observed: "The pace here is slow." Our general hospitals are geared toward illnesses which progress — and are managed — at a faster pace. Therefore, tuberculosis presents special problems. Last year, we published in these pages, a one year experience (for the calendar year 1976) with tuberculosis at the Richland Memorial Hospital, Columbia. We suggested that a systematic study of tuberculosis, based on maintenance of a central registry, offers many potential dividends.[2]

Continued study for an additional year (1977) provides two useful observations. Figure 1 shows, on a logarithmic scale, the number of new cases of tuberculosis in the United States, South Carolina, Richland County, and at Richland Memorial Hospital on a logarithmic scale. The incidence of this disease declines slowly; one notes that the number of new culture-proven cases at Richland Memorial Hospital actually *increased* the past two years. The second observation, shown in Figure 2, concerned a *pseudoepidemic*[3] of false-positive microscopic examinations for acid-fast bacteria (AFB smears), defined as positive smears with sterile cultures and no subsequent clinical evidence of tuberculosis. Early recognition of the outbreak was facilitated through the central tuberculosis registry. False-positive smears, an increasing hazard,[4] expose patients to the risks of delayed diagnosis of their true illnesses, unnecessary drug therapy, and, often, social and economic deprivation.

The DHEC recommendations merit careful implementation. Successful therapy of tuberculosis requires more time than that of any other infectious illness, and is full of pitfalls. Experience in states similar to ours — Arkansas is perhaps the best example[5] — indicate that control of the disease through community hospitals and physicians should be quite feasible, but will require a concerted and coordinated effort.

— CSB

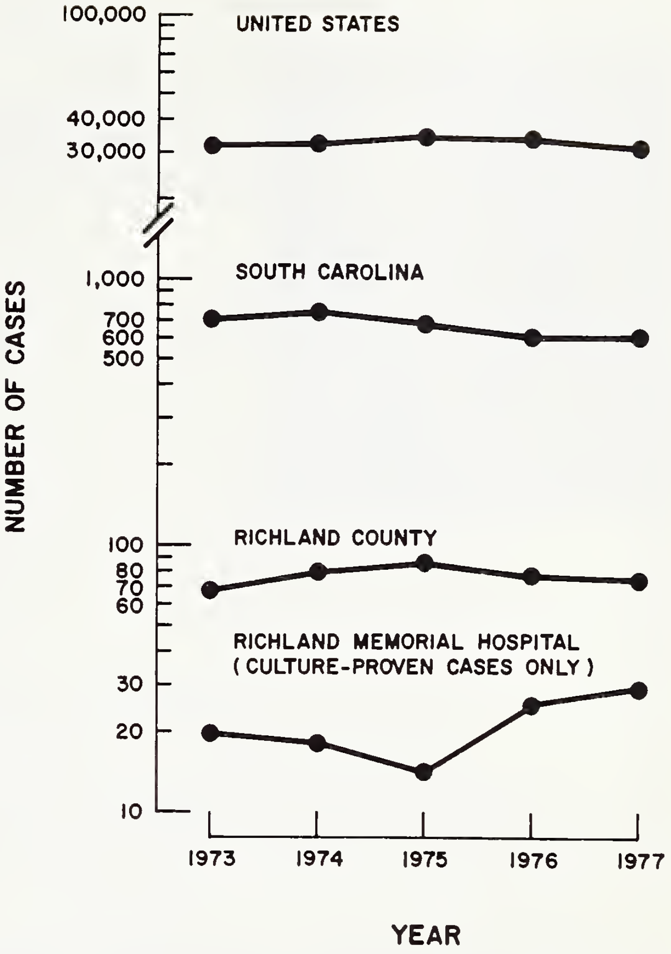

FIGURE 1. New cases of tuberculosis, shown on a logarithmic scale. The community hospital's tuberculosis registry forms a basis for perspectives.

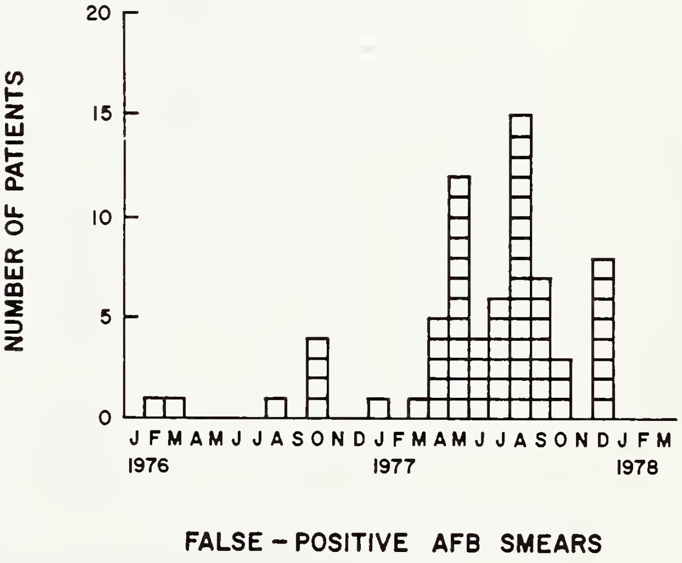

FIGURE 2. A "pseudoepidemic" of false-positive AFB smears at Richland Memorial Hospital occurred during 1977 (see text).

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President's Page

THE NEXT MEDICAL GENERATION

I am writing this on the eve of what I consider a rare and challenging opportunity, one which I will have only once. Tomorrow morning, at a Convocation for the First Year Class of the Medical University of South Carolina, I will speak for organized medicine to welcome these latest recruits to our profession. They are, in truth, the next medical generation.

What shall I say to them? Shall I extol the importance of the *private practice* of medicine, which I personally enjoy? Surely it is not up to me to tell them of the rewards of teaching and of an academic career, even though I followed this line for 16 years. Nor can I challenge them to consider careers in Research, a field for which I have had no great bent or talents. Others can speak of these areas more capably than I can. Then shall I speak only of the importance of participating in organized medicine, at county, state and national levels?

Or does it really matter what I say, since they will be overwhelmed by mountains of information, myriads of directives, and multitudes of challenges?

Obviously, I hope to make some impression and impact, or I wouldn't take the time to speak in the first place. Maybe they will retain for a short while a few things which I say. But I would be naive to think that my brief talk to them will have a significant impact in shaping their future careers.

Of far more importance is what physicians over the state, on a one-to-one basis, can accomplish. Those of us in the two medical school centers — Charleston and Columbia — have the greatest opportunity, of course. We have a much greater chance of contact with medical students on a day-to-day basis. However, physicians in other areas can participate also. A high proportion of students in both schools are from South Carolina — each has a "home town," large or small, or at least some area of identification. We must capitalize on this.

My challenge to every physician in South Carolina is this: Become acquainted with each new medical student from your area, let each student know of your interest, invite him/her to visit you in your office, to accompany you to your hospital, and to be your personal guest at a county or district medical society meeting.

You may be amazed at the enjoyment and personal satisfaction you will receive from this contact with promising young people. To use an old saying: "Try it; you'll like it!"

To facilitate this suggestion, I am asking the JSCMA to publish a listing of the first year medical students at both MUSC and USC, together with their home addresses. Please join me in giving them a cordial welcome to the most demanding and yet most rewarding of professions.

John C. Hawk, Jr., M.D.
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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 NOVEMBER 1978 NUMBER 11

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Controlled circulation postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

INFORMATION FOR AUTHORS

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 NOVEMBER 1978 NUMBER 11

SYMPOSIUM: PROBLEMS IN GENERAL SURGERY

THORACO-ABDOMINAL TRAUMA*

JOHN M. KRATZ, M.D.
DABNEY R. YARBROUGH, III, M.D.
ROBERT M. SADE, M.D.

Although recent reductions in highway traffic speed limits have produced a modest decrease in mortality due to automobile accidents, trauma continues to represent the most common cause of death in young people below the age of 35. In contrast to blunt trauma, penetrating trauma is increasing statistically throughout the United States. Accordingly, trauma will continue to represent a significant threat to life and an important part of surgical practice for the foreseeable future.

Combined injuries to the chest and abdomen, because of their complex nature, are a more serious threat to life than isolated injuries to either the abdomen or chest. Of utmost importance to the survival of patients with thoraco-abdominal injuries is the initial diagnostic and therapeutic approach, utilizing a clear order of priorities. Certain life-threatening emergencies require immediate management; after their control, diagnostic procedures can be undertaken, and rationally planned treatment begun. We will present a brief review of the priorities of diagnosis and management of patients with combined injuries of the chest and abdomen.

IMMEDIATE EMERGENCY MEASURES

A few complications of thoraco-abdominal trauma require management within a few seconds to preserve life.[1] Maintaining *patency of the airway* and breathing are always first priority (the sole exception is easily controlled exsanguinating external hemorrhage). The airway must be cleared of anything (foreign bodies or the tongue) which may be obstructing flow of air. After the airway has been cleared, the head may have to be positioned slightly extended to elevate the tongue from the oropharynx. If the patient is unable to ventilate adequately, endotracheal intubation may be required and artificial ventilation begun.

Adequate ventilation may be seriously impaired by consequences of the thoracic injury.[2] *Tension pneumothorax* must be immediately relieved. It is recognized by decreased breath sounds, hyperresonance on the affected side, and shift of the trachea away from the affected side. A large-bore needle inserted into the pleural space will decompress the tension and allow a more leisurely closed thoracostomy. *Sucking* (open) *wounds* of the chest wall should be converted to closed pneumothorax with an occulsive dressing until chest tubes are placed and the wound closed. *Flail chest*, multiple fractures of the chest wall with paradoxical motion, interferes with satisfactory ventilation, and can be immediately managed by stabilization of the affected chest wall with sand bags or strapping. If an endotracheal tube has been placed, initial treatment may be by positive pressure ventilation.

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Cardiac tamponade may be manifested by pulsus paradoxus, neck vein distension, and decreased heart sounds; it must be treated immediately by pericardiocentesis. If signs of tamponade reappear, pericardiocentesis must be repeated and median sternotomy urgently undertaken.

DIAGNOSTIC CONSIDERATIONS

The extent of most thoraco-abdominal injuries can be determined by history and physical examination; very few sophisticated laboratory tests or examinations are required in the evaluation of these severely injured patients. A clear history of the *mechanism of injury* must be obtained. In automobile accidents, the speed of impact, position of patient in the automobile, use of seat belts, and position of the patient after the accident are important in determining the severity and direction of the blow, permitting deductions regarding the extent of the injury. Patients with thoraco-abdominal injuries have suffered massive trauma, so other systems will often have been injured. The head should be examined carefully and palpated for scalp lacerations and fractures. Detailed neurologic examination should be performed. Of particular importance is continual recording of the patient's state of consciousness and mental status. The sensory and motor function of all cranial and peripheral nerves should be evaluated and recorded. The ears and nose should be palpated for fractures and inspected for the presence of blood or cerebrospinal fluid. The eyes should be examined for injury and to detect abnormalities in pupil size, equality, or reactivity. Any indication, however slight, of injury to the cervical vertebrae should be considered evidence of cervical fracture and the head and neck immobilized until the possibility of cervical vertebral injury is excluded.

The chest should be observed for tachypnea, intercostal retraction, sucking wounds, flail segments, or splinting of the chest wall. The entire chest wall should be palpated in search for instability and tenderness as signs of fracture. *Crepitus* of subcutaneous tissues indicates injury to the lungs and may indicate simple or tension pneumothorax. *Shift of the trachea* in the sternal notch implies the mediastinum is either being pulled (lung collapse) or pushed (pneumo- or hemothorax) in the direction of the shift.

Percussion may reveal deviation of the heart borders to one side as further evidence of a mediastinal shift. Hyperresonance suggests pneumothorax while dullness to percussion may indicate an accumulation of fluid within the pleural cavity or a ruptured diaphragm. Auscultation of the chest may reveal heart murmurs suggestive of intracardiac injuries. Decrease or absence of breath sounds may confirm the impression of pneumothorax or hemothorax. The presence of rubs may indicate cardiac or pulmonary injury, while mediastinal "crunch" may indicate esophageal injury.

Inspection of the abdomen may reveal *scaphoid configuration* suggestive of displacement of the abdominal contents to the thoracic cavity; a *distended abdomen* may contain large amounts of blood or air. Percussion of the abdomen may reveal dullness, suggesting fluid, or hyperresonance, suggesting free air within the peritoneal cavity.

The most important part of the abdominal examination is palpation to demonstrate *tenderness and masses* associated with visceral injury. Auscultation will reveal the presence or absence of bowel sounds.

The back, buttocks, perineum and rectum should be inspected for signs of injury. The pelvic bones should be compressed to demonstrate instability signifying fracture and the prostate should be palpated to elicit signs of urethral injury ("floating prostate"). The extremities should be examined for fractures, dislocations, soft tissue and vascular injuries.

Although the above evaluation will uncover most injuries, a few laboratory tests may confirm suspected or disclose unsuspected injuries. Chest x-ray should be obtained as soon as possible and used to supplement the physical examination. *Mediastinal widening* should arouse suspicion of bleeding; laceration of a great vessel must be ruled out by arteriography. Bones should be inspected for signs of fracture. Fluid or air within the pleural spaces may confirm physical findings. Apparent elevation in the left diaphragm may represent herniation of abdominal contents within the chest. *The chest x-ray should be done upright whenever possible* to disclose pleural fluid or air fluid levels. Similarly, abdominal x-rays may demonstrate the presence of fluid or air in the abdomen. A thin barium swallow may confirm a suspected esophageal wound in the presence of penetrating thoracic injury.

The electrocardiogram may demonstrate ST or T-wave changes or varying degrees of heart block suggesting *contusion of the myocardium* which occurs often after sternal trauma. Chest x-rays and electrocardiogram should be obtained serially throughout the patient's hospital course, since changes may appear late after injury.

Paracentesis and peritoneal lavage are frequently valuable in demonstrating the presence of blood or bowel contents indicative of solid or hollow visceral injury.[3, 4]

A Foley catheter should be placed in all patients with thoraco-abdominal trauma and the urine examined for hematuria suggesting renal injury. When injury is suspected, intravenous pyelography and cystography should be done; a few patients may require renal radionuclide scan or arteriogram for diagnosis. Skeletal films should be obtained to demonstrate fractures but should be delayed until the patient is stable and able to undergo these examinations safely.

THERAPEUTIC CONSIDERATIONS

Extreme emergencies requiring treatment within a few seconds have been discussed. Management priorities may be further subdivided into emergency problems requiring care within minutes of diagnosis, and urgent problems requiring treatment which may be delayed for a few hours.

After thoraco-abdominal trauma, *emergency problems* are principally in the chest. Simple pneumothorax and hemothorax are frequently diagnosed on physical examination, but their treatment can usually await confirmatory chest x-ray. Both lesions are treated by *chest tube drainage*. In the presence of shock or a deteriorating clinical situation, however, placement of chest tubes should not be delayed while awaiting chest x-ray. When hemothorax is drained, fluid and blood loss must be replaced expeditiously, first with a balanced salt solution, then with whole blood as it becomes available. Thoracotomy in an emergency room is not generally fruitful in treating hemothorax; thoracotomy may be delayed until rate of bleeding can be evaluated and the patient transferred to the operating room. *Most bleeding after chest injury stops spontaneously;* operation is seldom required.

Urgent injuries include penetrating wounds of the heart or great vessels. *Cardiac tamponade* should be treated immediately, as noted above, with pericardiocentesis; if it reappears, it should be tapped again and the patient moved to the operating room for thoracotomy. Most penetrating wounds of the heart and lungs, however, do not require operative treatment. Aortic rupture is not rare: radiographic widening of the mediastinum or deviation of a nasogastric tube placed within the esophagus should arouse suspicion of great vessel injury. Usually the patient is clinically stable, so angiography may be obtained prior to exploratory surgery; however, in the clinically unstable patient, surgery may be required without angiography. Myocardial contusion does not require surgical intervention but should be treated as a myocardial infarction. If septal rupture or valvular injury has occurred, surgical repair may be required. In most instances, this repair can be delayed for several weeks, but cardiovascular decompensation and low cardiac output may force earlier intervention.

Rib fractures are not usually life-threatening, but require treatment because pain may cause splinting, inadequate ventilation, atelectasis and pneumonia. Stabilization of the ribs with belts or strapping relieves pain, but risks further compromise of ventilation. Intercostal block is more rational, relieving pain without impairing ventilation.

Pulmonary contusion is treated nonoperatively: fluid restriction, diuresis if fluid overload has occurred, and pulmonary physiotherapy. Severe cases may require steriods, endotracheal intubation, oxygen administration, and continuous positive airway pressure therapy. Esophageal perforations should be operatively closed unless they are more than 24 hours old, when simple drainage may be all that is possible.

Diaphragmatic rupture is frequently first suspected by a change in the chest x-ray. The appearance of a gastric air fluid level in the chest makes the diagnosis obvious; however, the only abnormality may be apparent elevation of the left diaphragm. This injury is often missed only because it is not suspected. Urgent operation is required: the approach can be transthoracic or transabdominal depending upon the severity of associated abdominal or chest injuries, since the force required to cause a diaphragmatic rupture will frequently injure other organs.

Paracentesis and peritoneal lavage may aid in the diagnosis of intra-abdominal bleeding; however, it is important in the care of patients with blunt trauma of the abdomen that an aggressive posture toward *exploratory laparotomy* be maintained to avoid missing life-threatening hemorrhage or visceral injury. Certainly, any evidence of perforated hollow viscus requires exploratory laparotomy.

Pelvic fractures are managed by immobilization and blood replacement for bleeding. Only if the pelvic hematoma ruptures into the peritoneal cavity with continual bleeding is surgical exploration required.

COMMENT

Utilizing diagnostic and therapeutic priorities outlined above thoraco-abdominal injuries can be promptly and adequately diagnosed and treated. Following successful resuscitation and full evaluation of the trauma, decisions regarding specific therapy can be made. Appropriate specialists must be consulted when necessary. When the patient requires services not available in the admitting institution, arrangements should be made to transfer the patient to an appropriate medical facility. The referring physician must assure the arrival of the patient at the referral institution in the best possible condition. He must secure an adequate airway and intravenous pathway and assure that they can be maintained during transfer. He must ascertain that the emergency vehicle is properly equipped to care for emergency needs that may develop during transportation, and that well-trained attendants are present. In selected instances, it may be advisable for the physician to accompany the patient during transfer. When interinstitutional transportation is necessary, attention to the details of transfer are of equal importance to the details of initial management for the ultimate well-being of the injured patient. ☐

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STRATEGIES IN METASTATIC BREAST CANCER

PAUL H. O'BRIEN, M.D.*

Breast cancer is the most common cancer of women in industrialized countries. There is a marked variation in incidence from a high of 85 per 100,000 in the United States to a low of 11 per 100,000 in Japan. The incidence rate per 100,000 continues to increase yearly.[1] Real cure rates are low in long term studies where only 18 percent of breast cancer patients are free of disease twenty years post diagnosis.[2] The population of women with metastatic breast cancer is larger than previously suspected. Documentation that 80 percent of women with operable breast cancer and four or more histologically positive lymph nodes will have gross metastasis by 36 months[1] and, worse, only 13 percent ten-year survival[2] — mandates a definitive strategy for these patients by those assuming the clinical responsibility.

The major problem in strategy is whether the patient with metastatic breast cancer should be treated with chemotherapy or hormonal manipulation. "Hormone-dependent" human breast cancers were described as early as 1836 by A. P. Cooper.[3] Unfortunately, less than half of breast cancer patients have "hormone-dependent" tumors and many such patients have suffered the trauma of unnecessary ablative hormonal surgery. When the breast cancer is indeed hormone dependent, hormonal manipulation remains the most satisfactory type of treatment to date for metastatic breast cancer. There is, therefore, a great need for predicting which breast cancers are hormone-dependent.

Studies during the past ten years have shown that the estrogen receptor or estrophilin content of excised breast cancer will define a hormone-dependent breast cancer. These estrogen receptors can be measured with a Dextran-coated charcoal assay or through a sucrose gradient centrifugation analysis. A newer technique for the determination of Estrogen Receptors (E.R.) protein is by immuno-fluorescence. This technique has the advantage of being relatively simple, quick and inexpensive. The importance of this determination is reflected by the clinical correlations. If the breast cancer is rich in estrogen receptors, a major response will be found in 65 percent of the patients treated by endocrine therapy. If the cancer is found to be deficient in estrogen receptors, less than 2 percent of the patients respond to endocrine therapy.[4]

The identification of the estrogen receptor protein in resected breast cancers should be routine in that it resolves the above mentioned debate for those patients who later developed metastatic breast cancer and for the group of patients at high risk because of extensive invasion of regional lymph nodes.

In the hormonal manipulation of the patient, the woman who is menstruating regularly or who is within one year of her last normal period should have an oophorectomy. No other surgical procedures are added. The surgical oophorectomy is more definitive, faster, and more economical than oophorectomy created by ionizing irradiation. It is also felt that this is an appropriate surgical procedure for women who have four or more lymph nodes involved with cancer at the time of resection.

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If the patient should be more than one year past her last normal menstrual period, from the studies of Dao,[5] it is concluded that the results from an oophorectomy are minimal. It is true the ovary continues to produce estrogen and it is also true that there may well be a lushly supported vaginal epithelium. Unfortunately, the results of oophorectomy more than one year past the last normal menstrual period do not support the risk and cost of the procedure. In this group of patients we have usually begun hormonal therapy with nonvirilizing androgens. The one currently popular in our clinic is Delta-testololactone (Teslac). This synthetic androgen has the advantage of sparing the patient the unattractive side effects of testosterone propionate. We have not seen hirsutism, voice changes, and other forms of masculinization. There is, however, the threat of hypercalcemia which should be looked for and promptly treated if present. Treatment is essentially hydration and, if necessary, steroids.

Recently, we have been employing in our postmenopausal patients the antiestrogen Tamoxifen. This drug has been used extensively by the European Breast Cancer Group. The antiestrogen is felt to act through competitive binding to the estrogen receptor in the target organ. In early studies Tamoxifen-induced remissions have been comparable to those of surgical hypophysectomy as reported by Dr. Olof Pearson. Their group is one of a growing number which consider Tamoxifen to be the initial treatment of choice for postmenopausal women with hormone responsive metastatic cancer. In current studies, 48 percent of the patients treated have obtained objective remissions with the duration of the remission exceeding seventeen months.[6]

The role of adrenalectomy is currently unclear. The classical criteria have been: the patient who has shown an objective response to oophorectomy; who has the disease confined to soft tissues and skin; who has at least a two-year disease-free interval from resection to detection of metastasis; and with no history of hypercalcemia. Adrenalectomy and hypophysectomy remain equally effective. The hypophysectomy is probably less insulting to the patient if the properly trained clinical skills are available for the hypophysis to be removed through a trans-sinus approach. Adrenalectomy is an effective and safe procedure in proper hands. Care must be taken that the patient is intelligent and understands the need for daily hormone replacement.

The above going hormonal manipulations we feel provide minimal insult to the patient and have the best expectations for long objective remissions. Remissions from hormonal manipulation are significantly longer than those remissions seen from chemotherapy. The patients that are not considered candidates for further hormonal therapy because of an absence of estrogen receptor site in the original tumor and/or progression of disease despite hormonal manipulation should be treated with chemotherapy. Responses from chemotherapy are seen regularly after the patient has been treated with endocrine manipulation. Objective responses from endocrine manipulation after the patient has been treated with chemotherapy are rare. The recommended approach when chemotherapy is the treatment of choice is with combination chemotherapy which is superior to sequential single agent chemotherapy. The combination of cyclophosamide, methotrexate, and 5-Fluorouracil (CMF) is reasonably safe if given in a proper dosage; i.e.:

(C) Cyclophosamide — 100 mgm./M^2
P.O. From Day 1 - Day 14
(M) Methotrexate — 40 mgm./M^2
I.V. Day 1 and Day 8
(F) 5-Fluorouracil — 600 mgm./M^2
I.V. Day 1 and Day 8

with patient having a two-week rest from Days 15-28.

In following the patient, this optimal dose can be repeated twelve times with the great majority of patients tolerating the drugs. Complications include gastric disturbances, cystitis, and alopecia. CMF should be used with caution in the presence of myelosuppression. If the leukocyte count is less than 2500 and/or the platelet count under 75,000, no drug should be administered. If the patient has received prior radiation therapy or has extensive invasion of bone marrow, CMF may simply be too toxic. The best results to date have been in the premenopausal breast cancer patient. The escape from chemotherapy in the postmenopausal patient treated with this combination has been disappointing.[7]

In patients who are not considered candidates for CMF or hormonal manipulation, Adriamycin should be considered. The drug may be given as a single agent[8] or in combination.[9] It is most effective as a single agent when used after prior chemotherapy. The dosage is usually between 45-60 mgms./M^2 given intravenously every three weeks. Adriamycin should be stopped when the accumulative dose equals 550 mgm./M^2. Nausea, emesis, and alopecia are predictable, occurring in 90 percent of treated patients. Cardiac complications may occur from enlargement, pericarditis, and death from progressive cardiac failure.

SUMMARY

Metastatic breast cancer remains a major clinical problem. There is new information which can help us in clinical problem solving. The identification of estrogen receptor sites in the resected breast cancer contributes significantly to the choice of electing hormonal manipulation of multiple drug chemotherapy. Patients with four or more positive axillary lymph nodes should be considered to have subclinical disseminated breast cancer and treated systemically. Radiation therapy for local control remains our single most effective technique. ☐

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MANAGEMENT OF INTESTINAL OBSTRUCTION

GILBERT B. BRADHAM, M.D.*

Intestinal obstruction is defined as a condition wherein intestinal contents are prevented from passing distally. The condition may be caused mechanically or by lack of normal propulsive activity (paralytic ileus).

The causes of mechanical intestinal obstruction generally can be grouped into three categories. Intraluminal tumors, intussusception, large gallstones, feces, meconium, and bezoars comprise the category of "obstruction of the lumen." "Intrinsic bowel lesions" include atresia, stenosis, duplications, stricture and some tumors. "Extrinsic bowel lesions" include adhesions, internal and external hernias, volvulus and neoplasm.

We prefer to attempt to equate the cause with the clinical appearance rather than to memorize empirical categories. As an example, the patient diagnosed with intestinal obstruction who has had an appendectomy in the past has adhesions as a cause of his obstruction until proven otherwise. A newborn child with obstruction may have meconium or atresia as a cause, etc.

The diagnosis of intestinal obstruction is made from classical symptoms. Abdominal distention, pain, nausea and vomiting provide the necessity of ruling out intestinal obstruction. If these symptoms are combined with an abdominal surgical scar, we consider it absolutely mandatory that intestinal obstruction be definitively disproven.

If a diagnosis of intestinal obstruction is entertained, plain x-rays are made. These include chest films and a flat and upright view of the abdomen. If the patient's condition so indicates, a lateral decubitus view of the abdomen is substituted for the upright view. The pattern of gas and fluid level is carefully inspected for its indications of obstruction (See Fig. 1). If there is equivocation, we do not hesitate to have the patient swallow 20-30 ml. of barium and perform serial x-rays to follow the barium through the gastrointestinal tract. We have found this procedure extremely useful in differentiating mechanical obstruction from paralytic ileus in the hospitalized patient.

On admission to the hospital, the foregoing x-rays are performed if they have not been done as an outpatient procedure. Sigmoidoscopy is done as indicated. Laboratory assistance is pro-

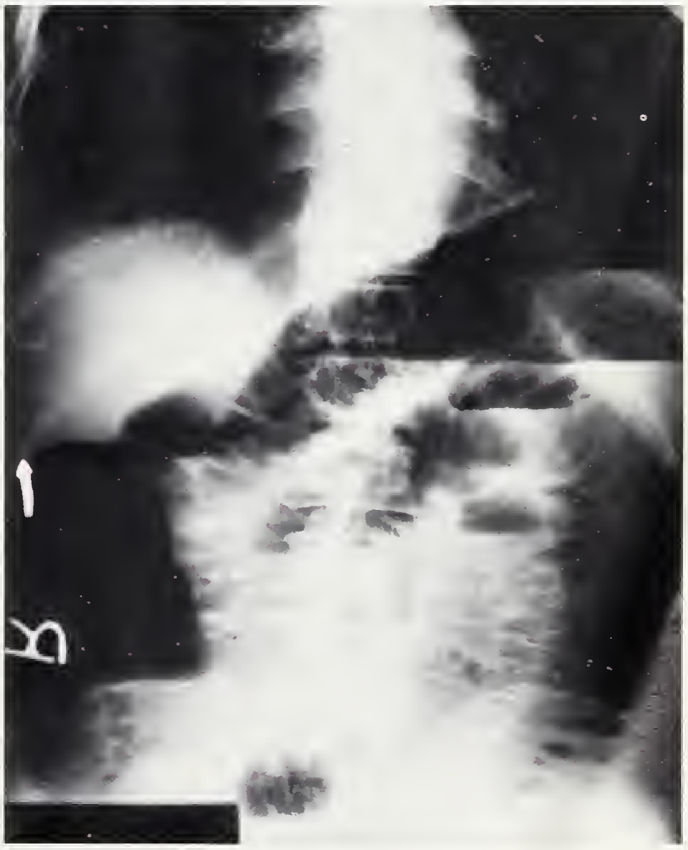

FIGURE 1: This upright x-ray of the abdomen depicts fluid and gas levels in distended loops of small intestine. The patient had intestinal obstruction.

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vided by tests including routine CBC, urinalysis, EKG as indicated, assessment of fluid-electrolyte balance, coagulation studies and cross match for blood as indicated. We have not found amylase and peritoneal tap consistent or totally reliable in determining the course of the patient. A careful assessment for four "classic" variables for determining urgency of surgical treatment is initially performed and repeated as often as indicated. These four classic variables are white blood cell count, body temperature, pulse rate and localized abdominal tenderness. It has been found that gangrene of the intestine does not exist when all four of these variables are normal.[1]

If the now hospitalized patient is considered by clinical and radiological means to have intestinal obstruction, surgical relief is planned. Operation is scheduled as early as feasible. Limiting factors will be the patient's general condition. It is recognized that delay between time of diagnosis and surgical relief can only be rationalized on the basis of *partial* correction of the pathophysiological events. The very nature of the bowel's occlusion and the body's tolerance of it continue to provide mechanical, septic, and metabolic problems that will only be corrected by the relief of the mechanical cause of the obstruction. In other words, while fluids and electrolytes are being infused into the patient, the bowel continues to become more edematous and more critical in terms of blood supply.

The proper management of the hospitalized patient in preparation for surgery includes (1) intestinal decompression by tube, (2) replacement of critical fluid and electrolyte deficits, (3) plasma volume replacement as indicated, (4) antibiotics as indicated, and (5) correction of other associated conditions.

(1) Preoperative intestinal decompression.

We have found that a simple double lumen (sump) nasogastric tube is generally sufficient for preoperative intestinal decompression. Actually, such a tube only decompresses the upper gastrointestinal tract, but in doing so, prevents the constant increase in bowel distention by swallowed air. Swallowed air comprises at least 80% of the gas in the small bowel and prevention of further swallowed air is helpful in preventing critical overdistention of the intestine. Additionally, decompression of the upper gastrointestinal tract protects against vomiting and aspiration, particularly dangerous during anesthetic induction. Finally, upper gastrointestinal decompression is helpful in allowing better diaphragmatic excursion and better pulmonary function.

Longer tubes which reach into the small intestine are more efficacious in intestinal decompression but have the disadvantage of requiring time for their travel past the duodenum or endoscopic or radiologic placement. Frequently we prefer to replace the nasogastric tube with an intestinal tube during the surgical procedure for the reason of better decompression and to obviate the alternative of an open enterotomy to decompress the intestinal tract. Such open decompressions are associated with very high infection rates.

(2) Fluid and electrolyte replacement.

The patient having intestinal obstruction has a fluid and electrolyte deficit. The problem is proper assessment of the quantity. Conventional laboratory values are not to be depended upon for quantification. We obtain laboratory values of the serum sodium, potassium, calcium, magnesium, hydrogen ion concentration, p02, pC02, but realize that a large and complex set of conditions can be operative to change their concentrations. We prefer to give solutions containing sodium and potassium in amounts estimated to be needed as determined by the clinical condition (skin turgor, general appearance, appearance of mucous membranes, urine output, pulse rate, blood pressure, fever, etc.). Hydrogen ion concentration is a reflection of poor peripheral perfusion and/or intestinal gangrene. If low, haste is advised in fluid electrolyte replacement and surgical correction of the obstruction. We do not waste time and effort trying to correct the plasma pH as an entity. Partial pressure of oxygen and carbon dioxide generally reflect pulmonary problems and may require immediate upper gastrointestinal decompression and pulmonary care prior to operation.

(3) The need for plasma volume replacement is generally reflected by pulse rate and blood pressure. We have measured plasma volume in the past but find that clinical assessment is

sufficient in preoperative preparation of the patient with intestinal obstruction. The hematocrit can be a simple guide to need for plasma replacement. If the hematocrit is elevated, it should be considered that significant dehydration has occurred and that plasma volume has suffered. Adequate plasma volume replacement will not only stabilize the hemodynamics of the patient but will aid in preventing prolonged edema of the obstructed intestine after surgical relief. If coagulation is abnormal in a patient with sepsis, fresh frozen plasma may be indicated.

(4) Antibiotics may be indicated in the management of the patient with intestinal obstruction. If gangrenous bowel is suspected, or, if peritonitis or pulmonary compromise is present, appropriate antibiotics should be used. When possible, antibiotics are begun intravenously in the preoperative period. Intraperitoneal antibiotics have been advocated when gangrenous intestine is encountered.[2] When a simple mechanical obstruction exists without complication, such as obstruction due to hernia incarceration, we prefer not to resort to prophylactic antibiotics.

(5) Correction of associated conditions should be begun in the preoperative period. The use of digitalis, correction of uncontrolled diabetes, pulmonary improvement, catheterization of the bladder are examples of need to assess the general condition of the patient prior to operation and to treat existing conditions.

Operative management is designed according to the most probable cause of the obstruction. External hernias are approached directly and the intestinal tract inspected carefully prior to its intra-abdominal replacement. Generally, midline abdominal incisions are used to facilitate management of all quadrants of the abdomen. Open decompression of the obstructed intestinal tract is avoided in favor of a nasointestinal tube when possible. If open decompression is required, complete closure of the abdominal wound is delayed.

A definitive operation is provided when reasonable; colostomies are resorted to when the patient's well being would otherwise be jeopardized.

When gangrenous intestine is encountered, it is resected with removal of all questionably viable tissue and an end-to-end anastomosis is provided. The abdomen is thoroughly irrigated with Hartmann's solution on all occasions.

Postoperative management is generally relegated to close monitoring and treatment of pulmonary problems and shifts of significant fluids and electrolytes. Decompression tubes are removed when intestinal propulsive activity is adequate.

Long term follow-up is provided to be certain that proper attention is given to the possibility of recurrence of condition. ☐

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DIAGNOSIS OF OBSTRUCTIVE JAUNDICE

MAX S. RITTENBURY, M.D.*

"Obstructive" jaundice is a descriptive term for jaundice resulting from a mechanical obstruction of the intra-hepatic or extra-hepatic bile ducts. Determining the location of the defect in bilirubin excretion that has caused the jaundice is the first step in diagnosis and treatment. Jaundice is usually clinically recognized with serum bilirubin levels of 2-3 mg./dl. Subclinical jaundice is present when bilirubin elevations are above normal but lower than that necessary to stain tissues. Although there are several classifications of jaundice, none completely delineate all of the conditions causing it, although the terms "pre-hepatic," "hepatocellular," and "post-hepatic" are of value.[1]

BILIRUBIN METABOLISM

Bilirubin is formed from hemoglobin mainly by the cells of the reticuloendothelial system, transported to the liver, absorbed across the cell membrane, conjugated mostly with glucuronic acid, and then excreted into the bile. After reaching the intestine bilirubin is degraded by enteric bacteria into absorbable fecal urobilinogens. That portion not reabsorbed remains eventually as stercobilin. The reabsorbed urobilinogens are again excreted into the bile, but if hepatocyte damage has occurred, they are readily excreted in the urine. Conjugated bilirubin is also excretable in the urine, but the unconjugated form is not.

Chemically the van den Bergh reaction is used to measure the levels of both forms of bilirubin, the "direct" reaction measuring the conjugated form and the "indirect" reaction the unconjugated form of bilirubin.

PRE-HEPATIC JAUNDICE

Pre-hepatic jaundice occurs when excessive amounts of indirect bilirubin are present within the serum and tissues because the capacity of normal hepatocytes to conjugate it and excrete it into the bile has been exceeded. Hemolytic anemias; blood hemolysis from sepsis, burns, mis-matched transfusions, or toxins; and massive transfusions with partially hemolyzed cells caused this form of jaundice. In addition, defective transport and transfer to the hepatocytes of the unconjugated bilirubin may occur with some forms of Gilbert's syndrome and after the use of some drugs, especially those used for cholecystographic studies. The indirect bilirubin is elevated in these types of jaundice.

HEPATOCELLULAR JAUNDICE

When the uptake of unconjugated bilirubin and/or its conjugation is impaired within the hepatocytes some forms of hepatocellular jaundice occur, among these being the "physiologic" jaundice of newborns, prematurity jaundice, Crigler-Najjar Syndrome, breast milk jaundice, and the Lucey-Driscoll syndrome. These are all probably due to an inhibition of the enzyme, glucuronyl transferase, responsible for major bilirubin conjugation. The indirect bilirubin is elevated in these types of hepatocellular jaundice, ruling out the possibility of post-hepatic jaundice. A second group of diseases causes other types of hepatocellular jaundice due to either generalized or selective bile secretory failure. The rare Rotor and Dubin-Johnson syndromes are due to cellular excretory defects, as is the jaundice of pregnancy occurring in the last trimester. Cirrhosis also causes hepatocyte excretory failure in addition to mechanical bile-duct obstruction. These types of intrahepatic jaundice are not treated surgically. Two types of hepatocellular jaundice due to generalized excretory defects are acute and chronic hepatitis and intra-hepatic cholestasis. The latter is obstructive in nature and the inflammation accompanying hepatitis also causes obstruction, thus making the differential diagnosis between these diseases and post-hepatic jaundice difficult.

Intrahepatic tumors and absesses may cause combined obstruction of the bile radicals and hepatocellular dysfunction. Drainage of abcesses is indicated, and some types of tumors are also resectable. All of these forms of hepatocellular jaundice are characterized by elevations in *both* the direct and indirect bilirubin levels in the serum, direct bilirubin and urobilinogen in the urine, and abnormal liver function tests. The latter tests include the serum transferase levels (SGOT, SGPT) and prothrombin time.

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POST-HEPATIC JAUNDICE

Post-hepatic jaundice occurs due to extrahepatic obstruction of the bile ducts. Cholelithiasis, strictures, pancreatic disease, congenital abnormalities, and trauma are the most common causes. These are all considered "surgical" diseases, and the patient must be evaluated for possible surgical relief of the jaundice.

As noted above, the differential diagnosis between post-hepatic, intra-hepatic cholestasis, and hepatitis can be difficult but of considerable importance because the post-hepatic forms of obstruction are deserving of surgical exploration while the stress of surgery can be detrimental to the other two forms.[2]

DIAGNOSTIC TECHNIQUES

The history and physical examination are essential to establishing the diagnosis, but the differential between hepatocellular and post-hepatic jaundice is usually made using laboratory, biopsy, and radiological tests. Excretory obstruction causes elevations in the bilirubin (both) and the alkaline phosphatase excreted by the liver cells. SGOT and SGPT are released by cell necrosis or hepatocellular death. Prothrombin is produced by the hepatocytes, and if they are necrotic prothrombin times cannot respond to parenterally administered Vitamin K, but if they are intact the prothrombin time will respond.

Various x-ray techniques are of value in diagnosing the cause of jaundice and should be used when needed.

Radionucleotide scanning, splenoportography, angiography, and ultrasound and CAT scanning, can define intra-hepatic masses above 1.5-2.5 cm. in size. When abscesses, tumors, or cysts are suspected these techniques should be used. Ultrasound and/or radionucleotide scanning should be used first, progressing to the more expensive and invasive tests only when these two are non-diagnostic and the clinical suspicion of such lesions mandates further study. Both are very accurate (80-95%).[3, 4, 5]

Percutaneous transhepatic cholangiography is an invasive technique that has been used fairly frequently, and this can be a definitive test for diagnosing obstruction. However endoscopic retrograde cholangiopancreatography (ERCP) is readily available now and is preferred because it is only endoscopically invasive, has fewer complications, allows the pancreas to be evaluated also, and has a high degree of accuracy in diagnosing obstructive jaundice (90-95%). In this test the Ampulla of Vater is cannulated and the biliary tree and pancreatic duct are outlined by injecting radioopaque dye. The presence and site of an obstructing lesion can be determined, and lesions of the Ampulla of Vater can be seen directly. Duodenal and/or pancreatic and biliary duct drainage can be obtained and examined for the presence of inflammatory cells (infection), malignant cells (tumors of the ducts, gallbladder, or pancreas), or cholesterol or calcium bilirubinate crystals (stones, lithogenic bile).[6, 7]

Direct needle biopsy of the liver can be used to study hepatic architecture and evaluate bile stasis or obstruction. The incidence of complications varies with the technique used, the needle size, and the experience of the operator. Hemorrhage, bile leakage, and infection may occur. Peritoneoscopy can be used to visualize the right upper quadrant, but definite indications for this procedure are limited, especially if adhesions are present to limit visibility. Hemorrhage (usually from a torn adhesion), peritonitis, and intestinal perforation may occur. Either of these procedures should only be done after other techniques have failed to yield a diagnosis.[8, 9]

A "mini-lap" or limited laparotomy can be done under local or general anesthesia, amplifying the advantages of peritoneoscopy and liver biopsy if needed. This procedure allows the surgeon to safely make a more thorough examination and obtain more appropriate biopsies if they are indicated. If the patient is correctly prepared, and if appropriate, this procedure can be expanded with general anesthesia to include definitive treatment for jaundice caused by an obstructing lesion.[10]

Any number of less-specific diagnostic tests can be used, but definite indications should be present. Thus, a sigmoidoscopic and possibly a barium enema examination would be indicated in a jaundiced patient with hematochezia and may show a primary colon tumor metastasizing to the liver.

Oral cholecystography and intravenous colangiography are not effective diagnostic aids in jaundiced patients with total serum bilirubin levels above 3 mg./dl. Their use is therefore rarely indicated when undertaking studies of the more jaundiced patients.

DIFFERENTIAL DIAGNOSIS

It is very important *not* to delay making a diagnosis of the cause of a patient's jaundice because of the potential for finding an obstructive or infectious disease. In obstructive jaundice decreasing liver function and/or the onset of suppurative cholangitis, a severe complication, can be directly related to prolonged obstruction even if due to a benign lesion. If a tumor is causing the obstruction early resection or bypass of the tumor offers the best results for obtaining a cure or a significant degree of palliation.

Patients with non-obstructive prehepatic and hepatocellular jaundice can be diagnosed by their clinical picture and elevations of the serum indirect bilirubin alone. These patients are not treated surgically.

Obtaining a history of malaise, headache, anorexia, and mild nausea occurring just prior to or concomitant with the onset of jaundice is useful in diagnosing acute or chronic hepatitis. In the acute phase the serum transaminases (SGOT, SGPT) are usually disproportionately elevated relative to elevations of the direct and indirect bilirubin and the alkaline phosphatase. If the inflammation persists the serum levels of the latter increase, and the transaminase levels decrease making the diagnosis more difficult to differentiate from cholestatic and post-hepatic jaundice.

In cholestatic and post-hepatic jaundice the serum levels of alkaline phosphatase and bilirubin, especially the direct form, are more elevated than the serum levels of the transaminases. However, as the hepatic cellular function deteriorates, the indirect bilirubin and the transaminase levels in the serum tend to increase.

If jaundice has been present for several days or weeks the above tests are usually inadequate for making a differential diagnosis. Ultrasound scanning can then be of value to diagnose stones, space-occupying cysts or abscesses, or tumors. If negative, ERCP is then indicated, and, if successful, obstructive jaundice can be definitely excluded or diagnosed. If the Ampulla cannot be cannulated percutaneous transhepatic cholangiography or, preferably, a "mini-lap" should then be done. If no obstruction is found a liver biopsy, either as a separate procedure or combined with the "mini-lap," should be done to differentiate cholestasis and other intra-hepatic disease such as chronic hepatitis.

The above sequence of procedures is designed to rule in or out the presence of most of the diseases that cause post-hepatic jaundice and can be treated surgically. It is not designed to completely study the patient who has jaundice due to other causes. If the above procedures are not readily available the patient should be referred to a facility wherein the definitive diagnostic tests can be rapidly performed.

The earlier diagnosis and treatment of obstructive jaundice-producing lesions results in a significantly reduced morbidity and mortality rate, and therefore undue delay is totally unwarranted. ☐

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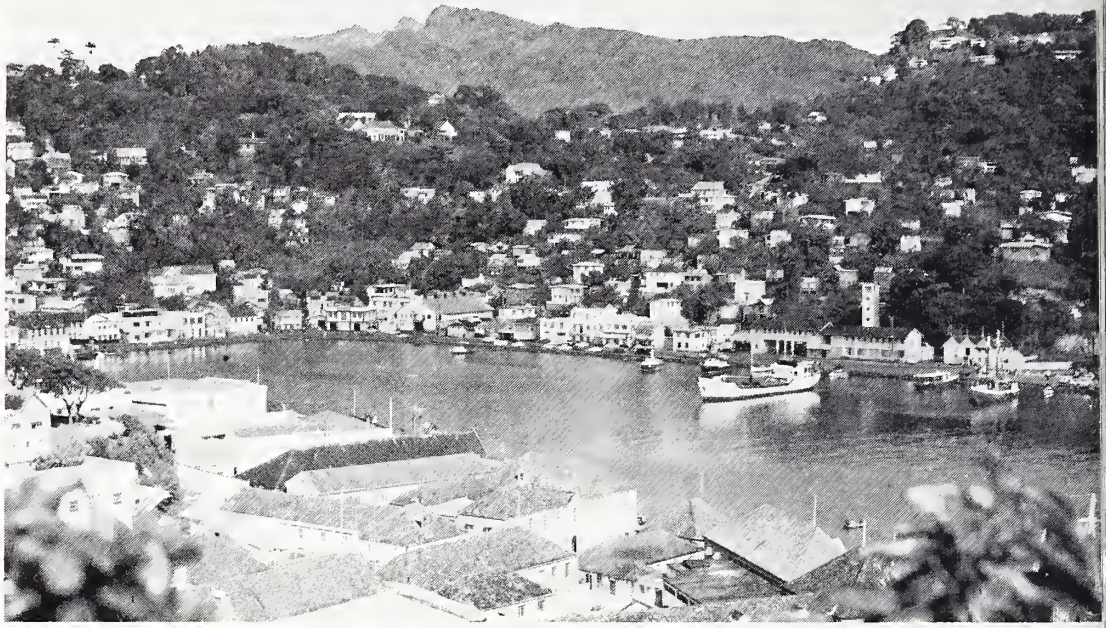

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SURGICAL APPROACH TO CHRONIC PANCREATITIS

MARION C. ANDERSON, M.D.*

During the past quarter century considerable progress has been made in the understanding of the etiology, pathogenesis and therapy of pancreatic inflammation.

In the majority of cases of chronic pancreatitis either chronic cholecystitis with cholelithiasis or chronic alcoholism can be implicated as the underlying etiological factor. Other less common causes include trauma, metabolic diseases such as hyperparathyroidism and hyperlipidemia, genetic disorders including aminoaciduria and certain drugs such as adrenocorticosteroids and thiazide diuretics.

Stimulated by the observations of Opie[1] who in 1901 reported the occurrence of severe pancreatitis in association with a gallstone impacted in the ampulla of Vater, early attempts at surgical correction were directed toward the elimination of biliary tract disease. Until the mid-1940's the standard approach to chronic pancreatitis was cholecystectomy, common duct exploration and long term drainage of the common bile duct. Subsequently Doubilet and Mulholland[2] added sphincterotomy to improve drainage from the terminal bile and pancreatic ducts.

Results with the biliary approach to chronic pancreatitis were variable. Patients with chronic cholecystitis and cholelithiasis were cured, almost without exception, when the biliary disease was comprehensively corrected. Conversely, an equal number of patients without gallstones benefited very little from cholecystectomy and decompression of the extrahepatic biliary tract. In retrospect it is apparent that this group developed pancreatitis as a consequence of chronic alcoholism or some other extra-biliary cause. Subsequent experience has shown that the predominant pathological changes in these patients originate within the pancreas, including one or more areas of pancreatic duct stricture, with consequent exocrine obstruction. Biliary procedures, including sphincterotomy, have no effect upon pancreatic duct obstruction except in a limited number of cases in which the stricture is confined to the ampullary region. More proximal strictures in the head, body and tail of the gland are not affected by operations on the biliary tract. These patients continued to experience repeated attacks and progression of the disease, with increasing fibrosis, deposition of calculi in the obstructed ductal system and ultimately destruction of the exocrine gland. The end result was an indurated, fibrotic, shrunken pancreas consisting of a markedly dilated duct, filled with calcific deposits and surrounded by an atrophic fibrotic rim of parenchyma — end stage fibrocalcific pancreatitis.

In 1953, Duval[3] approached the obstructed pancreatic duct by performing a distal pancreatectomy, splenectomy and retrograde drainage utilizing a Roux-en-Y limb of defunctionalized jejunum anastomosed end to end to the transected tail of the pancreas (Fig. 1). Subsequent experience has shown that this procedure is destined to failure in a high proportion of cases because the duct is involved by multiple strictures. End-to-end drainage failed to relieve the obstruction produced by strictures remaining in the residual gland.

In 1958, Puestow and Gillesby[4] recommended that the pancreatic duct be opened longitudinally along its entire course with retrograde drainage provided by a side-to-side pancreatiocojejunostomy (Fig. 2). More recently, extensive resection of the gland, either by 95% distal pancreatec-

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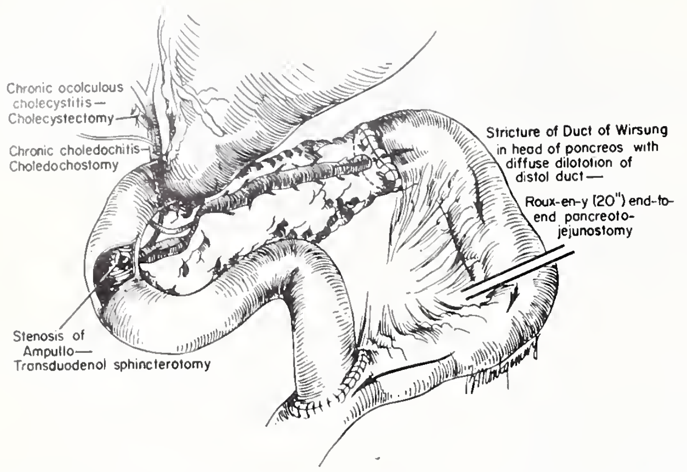
Chronic acalculous cholecystitis—
Cholecystectomy
Chronic choledochitis—
Choledochostomy
Stricture of Duct of Wirsung in head of pancreas with diffuse dilatation of distal duct—
Roux-en-y (20") end-to-end pancreato-jejunostomy
Stenosis of Ampulla—
Transduodenal sphincterotomy

FIGURE 1: End to end pancreaticojejunostomy utilizing a 20 inch segment of defunctionalized jejunum Roux-en-Y. Illustration also shows other classical features of fibrocalcific pancreatitis — acalculous cholecystitis, stenosis of terminal common duct, and stricture of pancreatic duct in neck of gland.

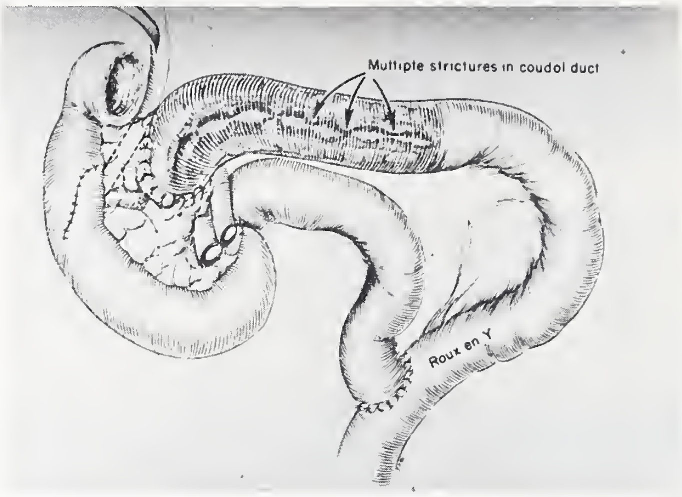

FIGURE 2: Side to side longitudinal pancreaticojejunostomy utilized almost exclusively because of the frequency of multiple sites of stricture in pancreatic duct. Author now completely opens duct from transected tail to duodenal wall.

tomy,[5, 6] pancreaticoduodenectomy,[7] or total pancreatectomy[8] have been employed to relieve the pain associated with end stage fibrocalcific pancreatitis. These various alternative approaches remain a source of controversy.

There is little question that chronic pancreatitis associated with chronic cholecystitis and cholelithiasis can be cured by comprehensive correction of the extrahepatic biliary tract disease. The latter includes cholecystectomy, removal of all stones from the extrahepatic ducts, and, when indicated, transduodenal sphincteroplasty. In contrast to sphincterotomy, sphincteroplasty involves the complete transection of the ampullary sphincter, and is particularly appropriate when multiple small stones are present in the ducts or when the ampullary area is involved by stricture or spasm.

Controversy surrounds the approach to advanced fibrocalcific pancreatitis in the patient suffering from chronic alcoholism. Unfortunately, a high percentage of these patients are unable to control their addiction, and continued heavy ethanol consumption results in progression of the disease regardless of the operation employed. Thus, the results of surgical treatment, or any other form of therapy for that matter, are distressingly poor in this group of patients.

Assuming that there is reasonable evidence to suggest that the patient's alcoholism can be controlled, surgical decompression of the exocrine pancreas will relieve the pain associated with chronic pancreatitis. Unrelenting upper abdominal and lower dorsal back pain is the principal indication for surgical intervention.

The author approaches the problem by first excluding the possibility of chronic biliary disease, including biliary calculi. This may be possible preoperatively with cholecystography and cholangiography. Endoscopic retrograde cholangiography and pancreatography (ERCP) is particularly helpful when successfully employed preoperatively.

A high percentage of patients with alcoholic pancreatitis have stenosis of the terminal common bile duct and ampulla. For this reason we perform a transduodenal sphincteroplasty in a high proportion of cases to assure adequate drainage from the terminal bile and pancreatic ducts. The remainder of the procedure consists of a comprehensive retrograde drainage of the exocrine pancreas. In most cases this includes distal pancreatectomy and splenectomy, opening the pancreatic duct longitudinally from the site of transection to the duodenal wall, and side-to-side pancreaticojejunostomy Roux-en-Y. In addition, it is essential to drain pseudocysts, which are present in over 50% of cases, and which frequently do not communicate with the major pancreatic duct (Wirsung). Details of the approach to comprehensive exocrine decompression are presented in several recent publications.[9, 10]

Our preference for limited resection and exocrine decompression over more extensive resections is based on the following reasoning:

1. Limited resections retain a maximum amount of pancreas and reduce the metabolic consequences of exocrine and endocrine insufficiency associated with extensive resection.[6]
2. Those patients who are successful in controlling their underlying alcoholism have an excellent chance for complete recovery if most of the pancreas is retained, whereas diabetes and steatorrhea may be a problem when extensive resections have been carried out.
3. Although the patient who continues to consume large amounts of alcohol is destined to progression of the disease regardless of the extent of the resection, the combination of uncontrolled alcoholism and the metabolic consequences of massive pancreatic resection present a formidable management problem well beyond that of pain associated with recurrence of the pancreatitis.

Further progress in the management of severe alcoholic fibrocalcific pancreatitis must await more effective methods of controlling the underlying alcohol addiction. Experience to date indicates that surgical decompression can be employed to correct intrapancreatic ductal obstruction and control of pain originating from this source. Although the percentage of patients falling into this category at present is small, the author has a number of examples of complete recovery following comprehensive exocrine obstruction, *but* only in patients who are able to completely abstain from alcohol consumption.

SUMMARY

Most cases of chronic pancreatitis are associated either with chronic cholecystitis and cholelithiasis or chronic alcoholism. The former group are cured almost without exception by correction of the biliary tract disease. In the alcoholic group the author favors comprehensive decompression of the obstructed exocrine pancreas (including pseudocysts) over extensive pancreatic resection to control unrelenting pancreatic pain, the primary indication for surgical intervention. Patients who continue to consume large amounts of alcohol are destined to develop progressive chronic pancreatitis regardless of the operative approach employed. Because of the limited success of long term control of chronic alcoholism, the surgical results in the management of pancreatitis associated with this disease are poor. ☐

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SURGICAL TREATMENT OF DUODENAL ULCER*

MICHAEL G. WEIDNER, JR., M.D.**
GARY F. EARLE, M.D.***

In this brief review, the results of the more common operations for duodenal ulcer will be presented. There will be no effort to discuss gastric ulcer, recurrent ulceration, stress ulcer, or the Zollinger-Ellison syndrome.

The incidence of duodenal ulcer disease, which increased continually during the first decades of this century, seems to have peaked in the sixties.[1] A Veterans Administration double-blind study of proximal gastric vagotomy (parietal cell vagotomy) was discontinued because not enough patients could be entered in the investigation in short enough time to assure a useful study. However, duodenal ulcer is still a prevalent disease. Medical management of the disease is effective and generally only a small number of patients will ultimately require an operation. Cimetidine has not been used for a long enough period to have been completely evaluated. Gastroenterologists believe it will be very effective in controlling the ulcer diathesis.

For those patients who require an operation for intractability or one of the complications of their ulcer disease, three operative procedures appear to have been thoroughly tested: subtotal gastric resection, antrectomy (hemigastrectomy) and truncal vagotomy, and pyloroplasty with either truncal or selective vagotomy. More recently attempts have been made to preserve the pylorus by using proximal gastric vagotomy (parietal cell vagotomy, highly selective vagotomy). These four procedures will be discussed briefly without describing surgical technique.

Subtotal Gastric Resection. This is the standard by which the newer procedures must be judged. The operation reduces acid secretion by removing the antrum and a large portion of the parietal cell mass. At least two-thirds of the stomach must be removed to control adequately the ulcer diathesis. This reduces the reservoir and produces dumping and failure to maintain weight. The ulcer recurrence and mortality rates of several series are presented in Tables I and II. The utilization of this operation is decreasing as newer procedures with fewer post-gastrectomy problems are proven adequate. It should be noted that subtotal gastric resection still has its champions, notably Ochsner.[2]

Antrectomy and Truncal Vagotomy. This procedure probably controls acid secretion better than any other since the cephalic phase is ablated by the vagotomy and gastrin production is controlled by removal of the antrum. An insignificant number of parietal cells are removed, so that the parietal cells present will still produce acid if stimulated. In general this procedure has a low mortality rate and the lowest recurrence rates. The result of several series are presented in Tables I and II.

Pyloroplasty and Vagotomy. The procedure is used frequently in emergent, non-elective cases.

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DUODENAL ULCER

TABLE I. RECURRENCE OF ULCER

Author	Subtotal Gastrectomy (%)	Vagotomy/ Antrectomy (%)	Vagotomy/ Pyloroplasty (%)
Goliger[3]	1.9	1.7	10.9
Howard[4]	5.0	3.9	10.0
Jordan[5]	-	0.9	7.5
Postlethwait[6]	3.7	0.7	8.9
Ohme[7]	-	-	10.0
O'Leary[8]	-	-	5.8

TABLE II. MORTALITY RATE

Author	Subtotal Gastrectomy (%)	Vagotomy/ Antrectomy (%)	Vagotomy/ Pyloroplasty (%)
Goliger[3]	0	0	0.5
Howard[4]	0	0	0
Jordan[5]	-	0	1.8
Postlethwait[6]	1.8	0.9	0.6

Only the cephalic phase of acid secretion is controlled. Since the antrum is present to produce gastrin, adequate drainage must be provided in order to prevent recurrent ulceration. The operative mortality and recurrence rates of several series are presented in the tables. The higher recurrence rate is evident. Proponents point out the large number of patients who *do not* get recurrences.

Proximal Gastric Vagotomy. This term would appear to be the preferred designation although parietal cell vagotomy and highly selective vagotomy are still in frequent use. The operation should divide the vagus nerves to the parietal cell mass but leave the vagus supplying the pylorus, small bowel, gall-bladder, pancreas, etc. intact. This should prevent the two most serious side-effects of vagotomy-antrectomy and vagotomy-pyloroplasty: dumping and diarrhea. Two references detailing well controlled studies are listed which give descriptions of the technique and the results.[9, 10] All authors caution that it is too soon to apply this procedure generally since there has not yet been an adequately long follow-up period. Table III shows the results from two controlled series.

Discussion. It would appear that antrectomy/vagotomy best controls the ulcer problem in most patients and does so with an acceptably low mortality. It should, therefore, be the operation of choice. Vagotomy/pyloroplasty is also an acceptable procedure but does not control ulcer disease as adequately. In emergency situations, in elderly or poor-risk patients, or in patients with low levels of acid production, vagotomy with an adequate drainage procedure might well be indicated. If used, however, the increased potential for recurrent ulceration must be accepted.

The role of subtotal gastric resection for duodenal ulcer is less clear. It seems that there is little place for the operation at present when the increased incidence of post-gastrectomy problems is considered. It is realized, of course, that some surgeons still prefer subtotal gastrectomy because of its long-proven satisfactory results and their personal experience.

The newer procedure, proximal gastric vagot-

TABLE III

PROXIMAL GASTRIC VAGOTOMY

Author	No. Patients	Recurrence Rate (%)	Mortality Rate (%)
Sawyers[9]	86	1.2	1.2
Jordan[10]	188	3.0	0.0

omy was devised to prevent the post-vagotomy diarrhea and the dumping syndrome inherent with removal or destruction of the pyloric sphincter. This operation should denervate only the fundus and body of the stomach, leaving intact the innervation of other organs supplied by the vagus nerve. The concept is appealing and a number of investigators are reporting good results in well-controlled series. The follow-ups are not yet long enough to be able to compare the results to other operations. Therefore, proximal gastric vagotomy is not recommended for general use but should continue to be evaluated in well-controlled series. □

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Editorials

MEMBERSHIP

The South Carolina Medical Association is the voice of the medical profession for the State of South Carolina. Yet, membership in our umbrella organization, the SCMA, is far short of the total number of licensed physicians in the state.

In order to be an effective instrument for organized medicine, we need representation in our Association from all segments of medicine in the state. Therefore, every effort should be made to improve upon physician participation in our professional State Association.

In an effort to broaden my ability to better address the Association's membership problem, I wrote several physicians across the state — physicians in varying medical specialties and in medical education — asking for their thoughts and their assistance in membership recruitment into the South Carolina Medical Association.

I feel that some very good responses were received and I felt it worthwhile to share with you some of these comments from your fellow SCMA members as shown in excerpts below. I would urge you to share these thoughts as well as your own thoughts regarding benefits derived from membership in your umbrella organization with those non-member physicians in your community, as membership truly is each and every member's responsibility.

The 1979 SCMA membership billing will be mailed soon. Therefore, NOW is the time to encourage those non-member physicians in your community to become a part of YOUR association!

Harrison L. Peeples, M.D.
President-Elect and Chairman,
SCMA Ad Hoc Membership Committee

"The delivery of health and medical care is today a maze of political, economic and scientific contradictions. For example, we now hear on good authority that the American people are really satisfied with their health care. The implications of this statement, alone, identifies an even greater role for physicians as informed advocates. Undoubtedly, more than ever before, things get done in government through group pressure and strong advocacy. The South Carolina Medical Association is not perfect, but it does offer us an opportunity to talk things over with colleagues and get attention upon the things that concern us."

W. Marcus Newberry, M.D.
Dean, MUSC College of Medicine

"I think SCMA has personally benefited me in the following ways: (1) interceded on my behalf in dealings with HEW in negotiating Medicare and Medicaid charges; (2) developed an alternate insurance program for medical liability insurance; (3) been a major force in instigating legislation to control unwarranted malpractice litigation; (4) has become a prime source of information to those individuals, agencies, groups or bodies who need input in order to make sound decisions on questions concerning health care; (5) has initiated, developed and been a major force in instigating a program of medical discipline, the major facet of this program being the Medical Disciplinary Act to provide an effective vehicle for monitoring and taking action in a fair and unbiased way to those physicians that do not uphold the high qualities of medical care which the Association endorses."

J. Ernest Lathem, M.D.
Greenville, S. C.

"I think we should certainly emphasize the positive role of the SCMA in getting the JUA started . . . and our continuing efforts to improve the physician image through PR. . . ."

John C. Hawk, Jr., M.D.
Charleston, S. C.

"I don't look for what the Association can do for me, but what I can do for the Association. I feel that everything I have received far exceeds everything I have put in. I have learned a great deal about South Carolina, its people and the

profession – the majority good but some bad – that we are a very honorable profession, concerned about ourselves and the public; and the good is so predominant that when a bit of bad surfaces it hits us in the face. I have gained in every way by belonging to the SCMA, but mostly in friendship."

Kenneth N. Owens, M.D.
Aiken, S. C.

"Membership in the SCMA should be viewed as a professional necessity by all of our colleagues, for only in the collective arena can we deal with the problems of the profession, determine our individual and collective goals and obligations, and through such broad input predict and work for progress. Each of us should make it a personal project to contact non-members in our area and invite their participation in our meetings – and once there, all SCMA members should give them a warm and sincere welcome."

William S. Hall, M.D.
State Commissioner of Mental Health

"I sincerely believe that our state association serves physicians in this state (including psychiatrists) admirably. The association takes an active role in state political matters which are of interest to physicians and have relevance to patient care. I believe the state association not only serves physicians' interests, but also serves patients' interests. For these reasons, I find my membership very valuable."

Layton McCurdy, M.D.
Charleston, S. C.

"SCMA is strong in representing organized medicine at national levels with excellent AMA Delegates, and family practitioners need to support this effort. Physicians in South Carolina who belong to SCMA carry the load for non-members because we all benefit from dedicated work of members in SCMA. A strong united effort by M.D.'s will carry more influence with legislators and agencies before which we appear."

Leonard W. Douglas, M.D.
Belton, S. C.

"The first problem (with the family practitioner participation) I feel stems from a historical view in which the specialists who practice medicine in a narrow field have always tended to look on the general practitioner as of inferior quality and because of this they have tended to delegate to him tasks and assignments which have very little opportunity for growth. I feel that two things have happened recently which have helped to reverse this trend, both of which include recognition of family practice as a recognized specialty. These are the establishment of the Specialty Advisory Committee of Council. . . . The second point is the recent action making a representative of each recognized specialty society as a voting member of the House of Delegates of SCMA."

James S. Garner, M.D.
Mullins, S. C.

ROBERT EDWARD JACKSON, M.D.

Physicians in South Carolina and throughout the Southeast joined the citizens of Manning in mourning the loss of Dr. Robert E. Jackson, who perished in a private airplane crash in September.

Unusual productivity and dedication to causes characterized the almost 42 years of Dr. Jackson's life. A busy family practitioner, he took time to encourage young physicians to enter the field of family practice; the last leg of his fatal trip was to have been a lecture on rural family practice to students in Tennessee.

The youngest of nine children born to the late Moultrie Reid and Anna Singleton Jackson in Sumter County, he worked his way through Clemson College and was graduated from the Medical University of South Carolina in 1961. He served in the Air Force during the Indochina War, during which he flew 96 combat missions. He received the Legion of Merit, the Airman's Medal for Heroism, a Bronze Star, and a Joint Service Commendation. Later, he served as a colonel in the South Carolina Air National Guard and as state air surgeon.

Dr. Jackson established a family practice in Manning, where he was active in many community affairs and served a term on the town council. He served the South Carolina Medical Association as a member of the House of Delegates, Sergeant at Arms, and chairman of the Specialty

Society Advisory Commission to Council, and member of the Committee on Medical Aspects of Sports.

One of Dr. Jackson's many friends, a newspaper columnist, described him as "a hyperactive guy — never happy unless he was on the move." This editor shared that impression — Jackson radiated energy and enthusiasm. Concern for others dominated his life; a small example was his role in organizing a group to protest Hanoi's silence on the fates of Americans missing in action. The South Carolina Medical Association extends condolences to his widow, daughter, and three sons.

— CSB

J. HOWARD STOKES, M.D.

Dr. J. Howard Stokes died recently in Florence, where he had practiced ophthalmology for 40 years. His career was remarkable for combining a successful medical practice with exceptional achievements in support of higher education.

Dr. Stokes served for 25 years as treasurer of the South Carolina Medical Association. He also served as president of the South Carolina Society of Ophthalmologists and of the Alumni Association of the Medical University of South Carolina. His was the gratification of seeing his sons become ophthalmologists and partners in the Stokes Eye Clinic. He was the first honorary life member of the Florence County Medical Society. With time, however, his name will probably be remembered best for his role in the founding of a college.

Credit with envisioning the possibility of a college in his adopted town, Dr. Stokes was instrumental in the establishment in Florence of a regional campus of the University of South Carolina in 1957. He continued to be among the major advocates of this school, and these efforts eventually led to the founding of the four-year state-suported Francis Marion College.

Dr. Stokes received the first honorary doctoral degree from the Francis Marion College, and saw the J. Howard Stokes Administration Building stand as a testimonial to his efforts. His death, after a short illness, coincided with that of Pope John Paul I. Observers noted that unusual reputations for good humor and love characterized both of these men.

— CSB

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There is no experience in pregnant women who have received this drug.

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AUXILIARY PAGE

WHAT DO MEDICAL AUXILIARIES DO?

One of the major things that Medical Auxiliaries do is to promote and continually support volunteer community health projects which fit the needs of their specific area.

To help with this enormous task there is the American Medical Association Auxiliary Project Bank which is a central file of over 630 successful community projects submitted by Auxiliaries all over the country. This wealth of ideas and know-how makes it possible for each county to share details of these projects with every other county in our nation. It is housed in Chicago at National Headquarters and accessible through a concise, easy to use catalog available to every Auxiliary member upon request.

South Carolina has thirty-six projects included in this 1978-1979 catalog covering subjects such as Mobile Meals, Nursing and Convalescent Home Programs, Educational and Social Programs, Blood Bank Assistance, programs dealing with Children and Youth, Fund Raising, Health Careers, Health Education, International Health, Physician and Spouse Joint Activities, Screening, and Safety.

Spartanburg County leads all other counties with twelve volunteer activities listed. Greenville has eight of their projects written up in the catalog. Ten counties have one or more of their projects listed and the South Carolina Medical Auxiliary has shared two projects through Project Bank, including the highly successful Governor's Conference on Child Abuse.

This convenient bank of ideas is easy to use by withdrawing appropriate projects for use by County Auxiliary volunteers. These contain details and reference material that make setting up a community health activity a relatively easy job. Contributing ideas to the bank is also a simple matter of writing a clear, detailed account of a successful project and depositing this into the file in Chicago (if it or a similar one is not already there) for use by other Auxiliaries.

Does your County Auxiliary have one or more such projects? If not, why not?

The medical profession desperately needs good public relations now more than ever before. What better way for physicians' spouses to say, "We Care," to our community than by actively sponsoring health and child oriented projects that are often so needed in our communities. York County has a project called HOPE which translates into Helping Other People Effectively. This is the aim of every Auxiliary, to offer HOPE to its community through Auxiliary participation.

Ask your spouse what your Auxiliary does in community work. You might be surprised at how much or how little your Auxiliary is doing. It needs your support and encouragement to grow and prosper.

President's Pages

REPORT TO THE SCMA HOUSE OF DELEGATES
Hilton Head, S. C., November 4, 1978

At this mid point in my year as President of the Association, it is appropriate that I report only briefly on what has been attained thus far, and dwell in greater detail on the problems which still face us, and which demand the focus of our attention.

Serving as your President is a distinct honor and privilege, for which I am indeed grateful to this House of Delegates, and the physicians of South Carolina. The time-consuming and at times boring necessity of driving to the many meetings in Columbia and other points over the state may dim temporarily, but can never extinguish my enthusiasm for our profession and our Association.

MEMBERSHIP:

While membership in the Association has passed the 2000 mark for the first time, and is at an all time high, we have no cause for complacency; because membership in our organization is still far short of the total number of licensed physicians in the state. Dr. Harrison Peeples, your President-elect, and Chairman of the Membership Committee, is largely responsible for developing a structured program of solicitation of members from varied groups, including practicing physicians in all areas, faculty members of our two medical schools, house staff and medical students. This cannot be just a committee job, however. All current members of the SCMA must help by showing their enthusiastic endorsement of the SCMA and its programs.

RELATION TO OTHER PROFESSIONS AND ORGANIZATIONS:

The organizations to which the SCMA must relate continue to increase in number. The Task Force on non-M.D. Health Professionals, chaired by Dr. Sidney Fulmer, is studying in depth the serious problems raised by the apparent encroachment by others in fields long considered to be the purview of physicians only. To this committee has been referred for evaluation the transcript of the SCMA/SCNA Joint Conference held in Columbia on July 23.

The Executive Committee has been serving as the Liaison Committee with several organizations including the South Carolina Hospital Association and the Pharmaceutical Association. It has also been designated to meet with a corresponding group from the South Carolina Bar Association. Cost containment has been a major focus of attention at meetings with the SCHA. A Joint Project Retreat to "improve Board, medical staff, and administrative relations" was held at Hilton Head, October 13-15.

In meetings with the Pharmaceutical Association, we have found areas both of common interest and of conflict. The proposed Pharmacy Act, which has been filed with the legislature, is considered of sufficient importance to the medical profession that an Ad Hoc Committee has been appointed to study it in detail.

It is gratifying to report that SCMA relations with DHEC under Dr. Albert Randall, and with DSS, under Mr. Virgil Conrad, are vastly improved over previous years. Cooperative programs, which we feel will materially benefit the health of South Carolinians, are underway with both agencies.

Participation by the deans of the two medical schools, Dr. Marcus Newberry of MUSC, and Dr. Roderick Macdonald of the USC School of Medicine, in the deliberations of Council has brought cooperation and understanding of the problems and programs of these institutions.

Having the Chairman of the State Board of Medical Examiners meet with Council and work closely with Council has also been a forward step in close cooperation between the SCMA and the Board.

REVISION OF CONSTITUTION AND BYLAWS:

At this meeting of the House of Delegates, you will become fully and perhaps painfully aware of the enormous amount of work which has been required in revising and updating the basic document upon which our Association operates. Particular thanks must go to Dr. John Beard and his Constitution and Bylaws Committee, and to Council, which spent hours reviewing the updated version. However, I must remind you that this House must give further close attention to make this document a workable, living instrument for progress of the Association.

Our Committee System is by no means perfect, and the proposed new Commission System in which committees will be grouped, is as yet an unknown entity. However, great progress has already been made in furthering the activities of both standing committees and special Task Forces. Systematic staffing of committees has been developed, and instructions for committee chairmen have undoubtedly proved helpful.

"SECOND OPINION" PROGRAMS:

The ultimate fate of "Second Opinion" programs developed and pushed by the HEW and by insurance companies is as yet undetermined. My personal views have been expressed in my August President's Page, and in the letter to physicians signed by Halsted Stone and myself. A letter from the South Carolina Medical Care Foundation, sent to physicians over the state at about the same time as our letter, may have contributed to some confusion, although we believe the two letters are not actually in conflict. It is our hope and determination to prevent the implementation of *closed* panels of consultants which might be used for *mandatory* consultation in the future.

PROFESSIONAL LIABILITY INSURANCE PROGRAM:

There are obviously still problems in the Professional Liability Insurance field even though there are now three sources of insurance available in the state: the JUA, CNA, and St. Paul's. It is hoped that a fully stable situation can be achieved during the coming year.

LEGISLATIVE PROGRAM:

With the approach of a new legislative year, the SCMA, through the Committee on Legislative Affairs, will be submitting legislative proposals and will take studied positions on various bills which relate to the field of health. The Chairmen of this committee, Drs. D. Strother Pope and John W. Brown, have enlisted the help of doctors over the entire state and within the various specialties. This is an activity of the utmost importance. The future of our profession and the health of the people of our state may well depend on the bills passed by the legislature during the coming year. If you are asked to assist in the legislative program in any way, please cooperate to the fullest.

COST CONTAINMENT:

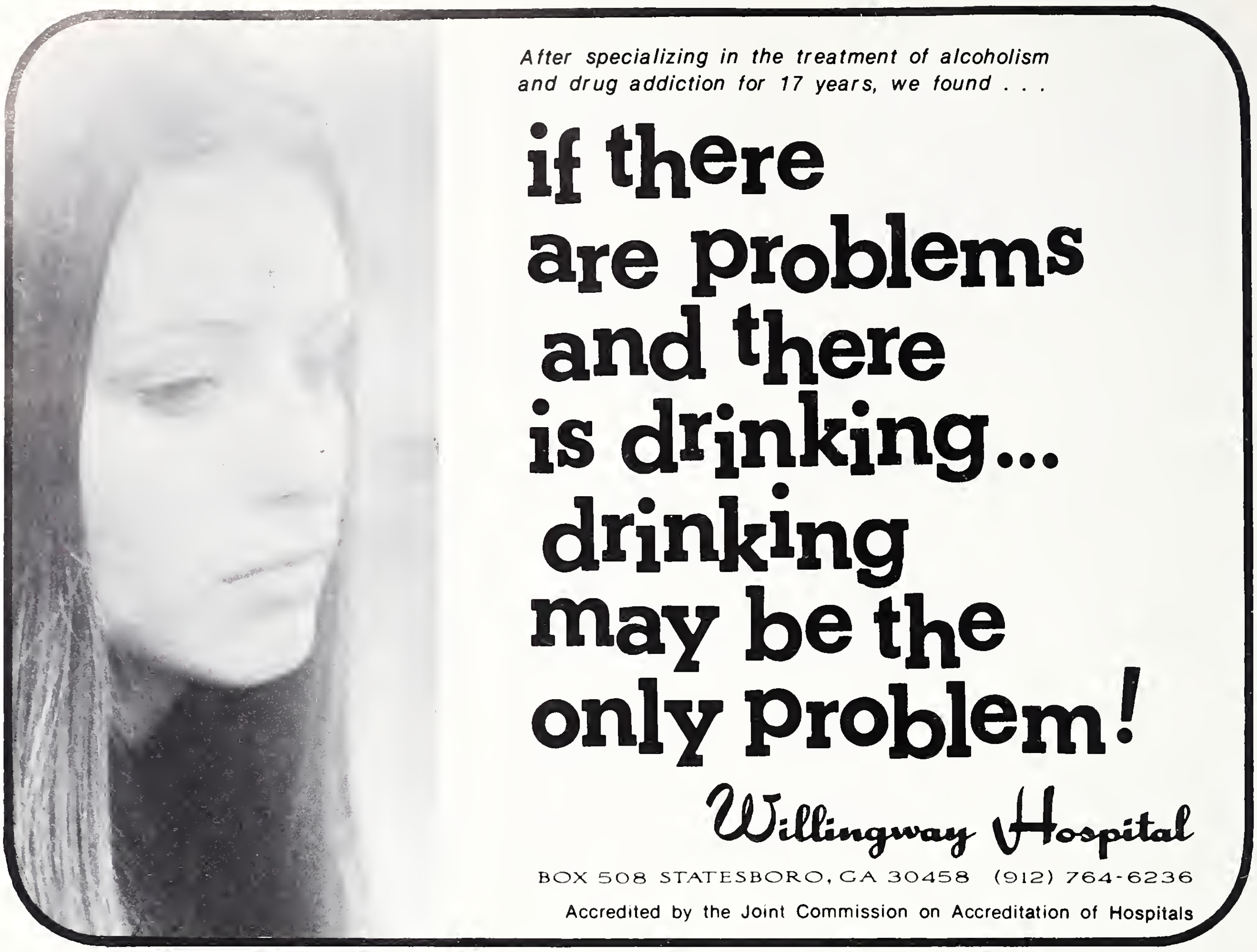
Continued cooperation of physicians as well as hospital and other "providers" is essential to the Voluntary Effort of Cost Containment in the health field. There is growing evidence of the success of the VE nationally and in our own state. This is not, however, a time for complacency or "resting on our laurels." Although we recognize that many of the major factors in rising costs, particularly inflation, are beyond our control, we must continue our efforts to affect favorably the areas where we can exert an influence.

SCMA AUXILIARY:

We are highly grateful to the members of the SCMA Auxiliary for their devoted work and their many achievments. I am sure we all read with great interest the monthly reports of their activities on the Auxiliary Page in the JSCMA. It has been my pleasure to meet recently with the Auxiliary Board and to speak to them of the important mutual interests and activities of our two organizations. We can count on their continued active support.

You, who have gathered here for this Mid-Winter Conference, have been chosen to represent your members at home because of your personal leadership and your willingness to work for the SCMA. The Association has come a long way in recent years, but much work remains to be done, and new challenges rise to be faced. I urge you to attack with vigor and determination the business of this meeting.

John D. Hawk, Jr., M.D.
President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THE SOUTH CAROLINA CHAPTER OF THE AMERICAN ACADEMY OF FAMILY PHYSICIANS announces its Thirtieth Annual Scientific Assembly, to be held at the Hyatt on Hilton Head Island, South Carolina, November 29 - December 3, 1978. Complete details available from the S. C. Chapter, AAFP, at P. O. Box 772, Mauldin, S. C. 29662.

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VOLUME 74 DECEMBER 1978 NUMBER 12

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THE JOURNAL SOUTH CAROLINA MEDICAL ASSOCIATION — Published monthly by the South Carolina Medical Association Business office: 3325 Medical Park Road, Columbia, South Carolina 29203. Mailing address: P. O. Box 11188 Capitol Station, Columbia, SC 29211.

Subscription price $6.00: in the U. S. ($7.00 per year, Foreign). Controlled circulation postage paid at Columbia, S. C.

The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

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THE JOURNAL
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION
VOLUME 74 DECEMBER 1978 NUMBER 12

THE INHERITANCE OF RETINOBLASTOMA IN SOUTH CAROLINA*

THOMAS M. LELAND, Ph.D., M.D.

Retinoblastoma is the most common ocular malignancy of childhood and infancy. It occurs in one out of 20,000 live births, based on worldwide statistics, and causes 5% of childhood blindness.[1] The tumor is highly malignant and is fatal unless diagnosis is early and treatment is prompt.

Retinoblastoma is inherited in the autosomal dominant pattern and penetrance of the gene is extremely high. While the vast majority of retinoblastoma are new sporadic mutations, 8-10% of all new patients have a positive family history for tumors. With a positive family history or with bilateral ocular tumors the risk of passing the disease on to an offspring rises to 50%.[2] Thus, probably nowhere in the field of ophthalmology does the doctor's role in genetic counseling of both patients and parents take on such major significance.

Presently there are few indicators at our disposal to define risk or detect the potential for the disease before it becomes manifest. There are no inborn errors of metabolism that we can test biochemically; demographically, there are no high risk areas in the United States. Chromosomal abnormalities have been reported in a few patients with sporadic tumors. The most frequent abnormality associated with retinoblastoma is a deletion of part of chromosome 13.[3]

This study was designed to re-evaluate all available data in South Carolina relative to patients with retinoblastoma and to re-examine all living patients in South Carolina with retinoblastoma in order to define the prevalence of this malignancy in South Carolina and to evaluate the heritability of this tumor in South Carolinians.

RESULTS

Review of the medical records of the Medical University Hospital, Charleston, South Carolina, revealed that there were twelve cases of retinoblastoma admitted during the study period from 1955 to 1977. All living members of that group of patients have been re-examined for this study and cytogenic chromosomal analysis has been performed. Cytological evaluations are still in progress and these data will be the subject of a subsequent publication. In addition, a telephone survey was made to ophthalmologists throughout the state to further define the prevalence of the disease. The case histories of these patients are summarized in Tables 1 and 2. This composite includes patients evaluated at the Medical University and 12 patients not seen at the Medical University who were diagnosed and treated by private ophthalmologists throughout the state.

---

* From the Storm Eye Institute, Department of Ophthalmology, Medical University of South Carolina, 171 Ashley Avenue, Charleston, S. C. 29403.

TABLE 1

Case Histories of Surviving Patients with Retinoblastoma Treated at the Medical University of South Carolina 1955-1977

Patient	Age at Diagnosis	Present Age	Presenting Sign	Pathology	Siblings	Parents
K.D.	22 mos.	9½ yrs.	no red reflex	tumor in optic disc	normal	normal
F.S.	24 mos.	2½ yrs.	esotropia and leukokoria	no extension	normal	normal
C.M.	3 mos.	22 yrs.	positive family history	no extension	two brothers died due to RB*	mother normal
B.H.	3 yrs.	5½ yrs.	leukokoria	no extension	none	normal
L.S.	8 mos.	7 yrs.	leukokoria	no extension	none	normal
D.W.,Sr.	22 mos.	26 yrs.	leukokoria	no extension	normal**	normal
D.W.,Jr.	10 mos.	1½ yrs.	positive family history	no extension	none	father has RB

* RB - Retinoblastoma

** D.W.,Sr. is the father of D.W.,Jr.

TABLE 2

Deceased Retinoblastoma Patients Undergoing Initial Evaluation and Treatment at the Medical University of South Carolina

Patient	Pathological Evaluation of Tumor Extension
C.B.	Poorly differentiated retinoblastoma with extension into choroid and optic nerve
W.G.	Scleral extension
T.T.	Scleral extension
A.S.	Extension into orbital wall and soft tissue
C.M.	Scleral extension
D.M.	Presented with proptotic, chemotic eye and died from generalized metastasis prior to surgery
V.H.	Extension into optic nerve

DISCUSSION

It is now accepted that retinoblastoma arises from the photoreceptor elements in the outer layer of the retina.[4] Most retinoblastomas are characterized histologically by the formation of Flexner-Wintersteiner rosettes which are spherical clusters of columnar cells arranged radially around a central cavity. This pattern is demonstrated in a pathological specimen from patient F.S. (Figure 1). Recent success with tissue culture techniques has resulted in the establishment of a cell line from human retinoblastoma in which the cells form a unique ring-shaped structure.[5] This may be related to the Flexner-Wintersteiner rosette pattern.

The first objective was to collect and re-evaluate the available data on the occurrence of retinoblastoma in South Carolina during the study period from 1955 to 1977. We were able to document only 24 cases of retinoblastoma in South Carolina during this period. This figure includes both Medical University cases as well as patients diagnosed in other areas of the State and treated elsewhere. During the study period there was an average annual birth rate of 60,000.[6]

Based on the textbook average of 1 case per 20,000 births, South Carolina could have expected 63 cases. The actual occurrence based on the 24 observed cases represents a frequency in South Carolina of 1 case of retinoblastoma in each 55,000 births. This is about ⅓ of the expected number based on national statistics.

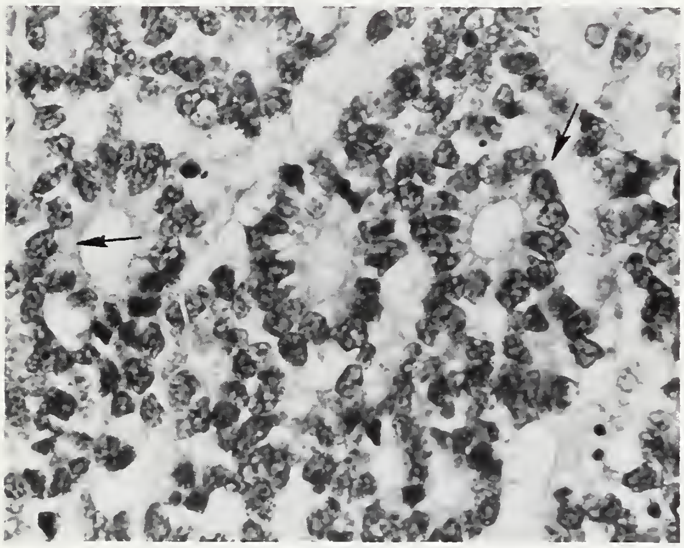

FIGURE 1
Photomicrograph of a human retinoblastoma demonstrating Flexner-Wintersteiner rosettes (arrow) X400.

Analysis of the geographic distribution of retinoblastoma in South Carolina revealed an interesting pattern (Figure 2). While the major population centers in the state are Charleston, Columbia, Spartanburg and Greenville, there is an apparent concentration of tumor in the less populous Hartsville, Darlington, Florence, Marion and Sumter regions of the state. This is probably of no significance but it suggests that the gene frequency is lower in the more mobile society of the urban cities and higher in the more stable population group of the rural areas of the state. This area of increased density of the tumor corresponds to a band where the incidence of stroke and cardiovascular disease has been observed to be extremely high.[7] Consanguinity was looked for in our group of patients but none was observed.

There is almost invariably a long delay from the time that the first signs of ocular abnormalities are noted and the time that the definitive diagnosis of retinoblastoma is made. Contributing to this delay is the rarity of the tumor, the often minimal external eye signs and the lack of awareness of the ominous significance of the presenting signs. The presenting signs can range from a subtile strabismus to a florid proptotic eye with cellulitis. The more common presenting signs of retinoblastoma include strabismus, glaucoma and iritis, but clearly, the most frequent presenting sign is leukokoria (cat's eye reflex), perhaps as often as in 50% of cases. Thus, the differential diagnosis of retinoblastoma is essentially the differential diagnosis of leukokoria. Second in frequency of presenting signs is strabismus. The importance of subtile ocular deviation in infants cannot be over emphasized and parental concern should not be dismissed with the suggestion that the child will grow out of it.

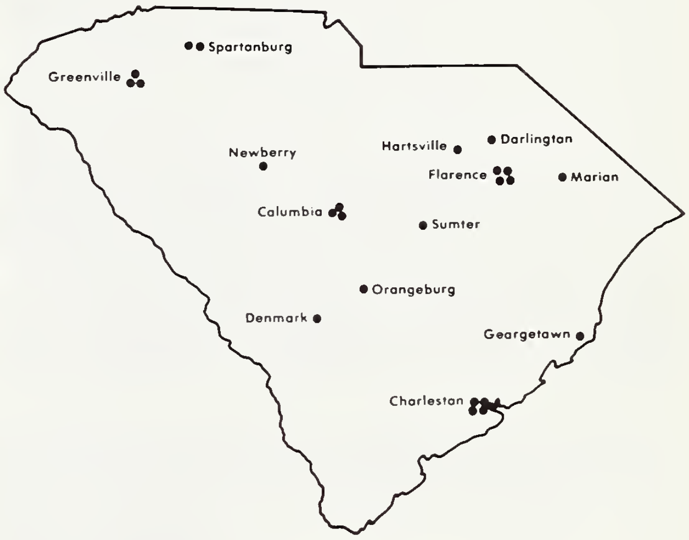

FIGURE 2
Geographic distribution of retinoblastoma patients in South Carolina during the study period (1955-1977). Each black dot represents one patient.

The most significant factor in the treatment of retinoblastoma, as with most cancer, is the stage of the disease at the time treatment is undertaken. When the disease has spread outside of the eye the prognosis is practically hopeless. Of the 12 cases of retinoblastoma evaluated at this institution 5 are still living. Those patients with extra global extension died of their disease (Table 2). Even scleral extension is sufficient to suggest a guarded prognosis.

Many children with retinoblastoma are now being saved thanks to early diagnosis and rapid initiation of therapy. These patients will be at risk for transmitting this heritable disease. Consequently physicians in primary care specialities (family practice, pediatrics) should be able to advise the parents of these patients regarding the disease. The emotional trauma to parents of having a child with cancer and its attendant hospitalization, surgery, ancillary treatments and prolonged post surgical evaluations dampens the urgency of discussing genetic risks and the advisability of child bearing which may be 15 to 20 years in the future. The inappropriateness of this delay can be dramatized by patients #6 and #7 in Table 1. D.W., Sr. denies being told of the genetic nature of his disease. Now 20 years later he has given his son (D.W., Jr.) bilateral retinoblastoma.

The incidence of retinoblastoma appears to be low in South Carolina when compared to national averages for the tumor. Nevertheless, one or two children with the disease can be anticipated annually and the involved physician should be comfortable in his ability to advise the parents. This genetic counseling can be kept simple. All bilateral cases should be considered genetic and have a 50% chance of transmitting the tumor. On the other hand, if the tumor is unilateral and there is no family history for retinoblastoma there is practically no risk for transmitting the malignancy. ☐

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ACKNOWLEDGEMENTS

The author wishes to express appreciation to Mrs. Ann Malia for typing and editing the manuscript and to Dr. James Powers, Department of Pathology, Medical University of South Carolina, for providing the photomicrograph used in this report.

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SCREENING FOR PHENYLKETONURIA (PKU) IN SOUTH CAROLINA*

ARTHUR F. DiSALVO, M.D.
LUCY L. SCARBOROUGH, M.T. (ASCP)

> *It is not so important to know everything as to know the exact value of everything. To appreciate what we learn and to arrange what we know.*
> Hannah More

In 1965, the General Assembly of the State of South Carolina passed an Act to provide for the testing of infants for phenylketonuria. This Act provided that "Every child born in any hospital licensed by the State Board of Health shall have a test for phenylketonuria."

Phenylketonuria (PKU), an inborn error of metabolism, results from the inability of a newborn to metabolize phenylalanine, an amino acid usually found in the regular protein diet. The basic defect is a deficiency of the phenylalanine hydroxylase, an enzyme in the liver which normally converts phenylalanine to tyrosine. PKU is the inevitable outcome of the enzyme deficiency and is usually accompanied by abnormally elevated blood phenylalanine levels. Elevated phenylalanine levels, if uncorrected, will usually cause mental retardation. By utilizing a simple blood phenylalanine screening method, the condition is easily detected and damage to the central nervous system may be moderated or prevented entirely by management of the diet. Presently, the key to the control of this hereditary disease is early detection followed by the use of a low phenylalanine diet concurrent with clinical and laboratory evaluation.

PKU was first described in 1934 by Folling in Norway. His discovery occurred with the initial evaluation of two mentally retarded children. During the following years, many new cases of PKU were discovered among mentally retarded children using the ferric chloride method to detect urinary phenylpyruvic acid.

In 1953 Bickel, et al., showed that a diet low in phenylalanine could reduce the infant's blood level of this metabolite. This discovery prompted a search for affected infants. The first mass screening of infants for this disease occurred during the 1950s in Birmingham, England. They were screened by applying ferric chloride to urine samples.

The principal disadvantage of the ferric chloride test procedure is that it takes several weeks for the enzyme deficient infant to excrete phenylpyruvic acid in the urine. The delay caused two problems: the newborn was no longer captive for testing and mental impairment may have started by the time the disease was manifest in the urine. In 1962 Guthrie developed the bacterial inhibition assay method to detect phenylalanine in the blood.

The Guthrie bacterial inhibition assay test is used in the South Carolina Department of Health and Environmental Control, Bureau of Laboratories to screen newborn infants and to monitor the effects of diet. The principle of the test is based on the fact that the inhibition of the growth of *Bacillus subtilis* by Beta-2-thienylalanine is halted by phenylalanine, phenylpyruvic acid and phenylacetic acid. Blood specimens for the test are obtained by heel puncture and collected on filter paper at least 24 hours after the baby's first milk feeding. A level of 4 mg/dl or greater requires a repeat test.

---

* From the Bureau of Laboratories, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, S. C. 29201.

This paper reports the results of blood testing almost one-half million children born in South Carolina during 17 years (fiscal years 1962-1978).

Laboratory testing for PKU in South Carolina began in early 1962 when a staff bacteriologist was sent to Children's Hospital, Buffalo, New York, to learn the procedure from Dr. Robert Guthrie.

During the three years prior to passage of the law (FY 1962-1964), 14,055 blood specimens and 7,611 urine samples were examined (Table 1). These studies were not limited to newborn infants and included surveys of mental institutions in South Carolina. As a result, 11 cases of PKU were detected among selected patients from Whitten Village and Midlands Center (Table 2). After passage of the PKU Act in 1965, urinalysis for phenylpyruvic acid was abandoned. All further studies have been conducted on whole blood collected on filter paper and examined by the Guthrie method.

The South Carolina PKU Act had a restriction, i.e., the test was required only of infants born in hospitals licensed by the State Board of Health. The number of infants born in hospitals is shown in Table 3. Since PKU is essentially a disease of caucasians, the births are shown as white and non-white.

Table 1. Number of Examinations for PKU Prior to Passage of S. C. PKU Act (Fiscal Years 1962-1964)

Year	Urine	Blood
1962	Few	Few
1963	3,309	4,838
1964	4,302	9,217
Total	7,611	14,055

It is recommended that all infants are tested prior to discharge from the hospital. If the child has been tested before completion of 24 hours feeding of protein or the infants are not born in a hospital, the parents are directed to their pediatrician or local county health department for specimen collection. Because there are no penalties for failure to comply with the 1965 PKU Act, specimens for all newborn infants were not submitted to the Bureau of Laboratories for testing. This is evident in the percent of live births tested for PKU as shown in Table 4.

An amendment to the PKU Act, passed by the 1978 General Assembly, states that every child born in this State shall have neonatal testing to detect inborn errors of metabolism and provides for designation of persons responsible for obtaining the samples and penalties for failure to comply. This modification should substantially increase the percentage of South Carolina newborn infants tested for PKU.

The actual numbers of infants born, infants tested and annual cost of screening for this disease is shown in Table 4. Prior to 1974, there was limited information available to calculate the cost of testing. At that time, personnel, supplies, postage and clerical assistance were the only factors considered. In 1974, the Bureau of Laboratories instituted a new method of cost accounting which also took into consideration indirect costs such as agency overhead, fringe benefits, evaluation of new test procedures, quality control, laboratory safety, proficiency testing and the value of the physical facilities.

Using the average cost of PKU determination generated during the last four years (96¢ per test) as a more accurate reflection of funds used by this agency to screen for this disease, the total funds expended were less than $465,000.00 since the inception of this program. As shown in Table 2, 45 cases of PKU have been detected which is an

Table 2. Number of PKU Patients Identified Annually and Cumulative (Fiscal Years 1962-1978)

Year	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Patients	1	1	4	6	1	5	3	0	0	2	6	2	3	3	1	5	2
Cumulative	1	2	6	12	13	18	21	21	21	23	29	31	34	37	38	43	45

Table 3. Percent of Births in South Carolina Which Occurred in Hospitals (1)

YEAR	TOTAL	WHITE	NON-WHITE
1962	86.0	99.5	67.2
1963	86.9	99.6	68.9
1964	88.2	99.5	72.5
1965	88.8	99.1	73.9
1966	89.9	99.3	75.9
1967	91.3	99.6	78.8
1968	93.0	99.7	82.2
1969	93.0	99.3	82.5
1970	93.5	99.4	83.7
1971	94.9	99.6	87.3
1972	96.2	99.7	90.5
1973	97.2	99.7	93.1
1974	97.8	99.8	94.8
1975	98.1	99.6	95.9
1976	98.5	99.6	97.0
1977	98.8	99.9	97.8
1978	*	*	*

(1) From South Carolina Vital and Morbidity Statistics 1976, The Division of Biostatistics, S. C. Department of Health and Environmental Control, Columbia, S. C. (December, 1977).

* Not available until May, 1979.

Table 4. Annual Number of PKU Examinations, Live births and Cost for PKU Screening

Year	Number of PKU Examinations	Number of Live Births (1)	Percent of live births tested for PKU	Annual Cost
1963	4,838	58,231	8.3	$ 1,792
1964	9,217	56,906	16.2	2,974
1965	11,774	52,853	22.3	2,590
1966	18,204	50,653	35.9	4,005
1967	22,119	49,822	44.4	4,866
1968	27,222	49,158	55.4	5,989
1969	29,149	50,401	57.8	6,413
1970	31,910	52,283	61.0	7,020
1971	36,256	52,984	68.4	7,976
1972	39,472	49,951	79.0	8,684
1973	38,887	48,922	79.5	8,555
1974	40,328	48,432	83.3	8,872
1975	42,129	46,665	90.3	26,541(3)
1976	39,678	47,651	83.3	38,884(3)
1977	43,036	49,846	86.3	40,023(3)
1978	47,399	(2)		
TOTAL	481,618			

(1) From South Carolina Vital and Morbidity Statistics 1976, The Division of Biostatistics, S. C. Department of Health and Environmental Control, Columbia, S. C.

(2) Not available until May, 1979.

(3) Method of accounting changed to reflect Agency overhead, fringe benefits, value of rental and utilities.

average laboratory cost of slightly more than $10,000 per case. This cost compares favorably with the approximate cost of $15,000 per year for institutional care in South Carolina.

During the 17 years of PKU testing, 45 cases of PKU were detected among 481,618 infants screened; therefore, the incidence of this disorder in South Carolina is 1:10,703. This is approximately the incidence reported in other studies. □

AN UPDATE ON THE CLINICAL APPLICATION OF BLOOD COMPONENTS*

ANNE D. MORGAN, M.D.

With the increasing demand for blood and blood products in the face of limited blood supplies, the practice of proper component transfusion therapy has become both medically and economically mandatory. There is now the potential for treatment of two to six patients with the blood obtained from one donor, and whole blood is no longer routinely available from most blood centers. Due to the rapid advancement of medical technology and medical instruments, whole blood can be prepared into packed red blood cells, leucocyte-poor blood, or frozen-deglycerolized red blood cells, and the plasma obtained from one unit of whole blood can be used to make fresh frozen plasma, cryoprecipitate and platelet concentrates, or pooled for fractionation to make albumin, plasma protein fraction, and gamma globulin.

I. *Packed red blood cells*, prepared by removal of most of the plasma from a unit of whole blood, have the same storage life as banked whole blood and have the following advantages over whole blood:

1. Provision of the same oxygen-carrying capacity in less than half the volume of a unit of whole blood, thus decreasing the danger of circulatory overload, particularly in elderly and debilitated patients, most pediatric patients, and those with cardiac or renal impairment.
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3. Removal of most of the antibodies present in a unit of whole blood which may cause potential transfusion problems, such as in patients receiving group O blood who have another blood type and patients who have antibodies to specific plasma proteins (especially IgA).
4. Removal of most of the white cells, which are thought to be responsible for the majority of non-hemolytic febrile transfusion reactions.
5. Less danger of microemolization to the lungs (shock lung) from microaggregates formed from fibrin, white blood cells, and platelets in stored whole blood, which is particularly important in patients with pulmonary insufficiency.

In a normal adult, one unit of packed red blood cells should raise the hemoglobin 1 gm. % or the hematocrit 3%.

II. *Leucocyte-poor blood* is the component remaining after removal of most of the leucocytes and platelets as well as plasma from whole blood. It is primarily indicated to prevent febrile transfusion reactions thought to be due to anti-leucocyte antibodies and to prevent sensitization to tissue (HLA) antigens in potential transplant recipients. It is also indicated for many types of immunodeficiency diseases to decrease the likelihood of graft-versus-host reactions resulting from the injection of viable lymphocytes into immunologically incompetent patients.[1]

III. *Frozen-deglycerolized red blood cells* contain no plasma and a minimum number of white blood cells and platelets. It is the product of choice when blood group antibodies, plasma proteins, and plasma electrolytes may be potentially harmful to patients and when minimum risk of sensitization (especially to HLA antigens) is desirable. The major disadvantage is the greater expense, but the freezing process allows the stockpiling of rare blood types and the storage of blood for autologous transfusion when indicated. There is also less risk of hepatitis with the use of this product. Frozen red cells must be used within 24 hours of thawing.

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* From the Carolina Lowcountry Red Cross Blood Center, 101 Doughty Street, Charleston, S. C. 29401.

IV *Fresh frozen plasma* is separated from whole blood and frozen within six hours of collection. It contains all the plasma coagulation factors except platelets. It is indicated for the treatment of specific factor deficiencies where a concentrate is not available or for deficiencies of multiple clotting factors, as seen in liver disease, disseminated intravascular coagulation, or massive blood replacement with banked blood. Because of dilution of coagulation factors when packed red cells are used in large volumes, it is suggested that two units of fresh frozen plasma be transfused after the first ten (10) units of packed red cells and then one unit after every three to four units of red cells. Dilutional thrombocytopenia may also be a problem with massive transfusion; therefore, six (6) units of platelet concentrate are recommended after transfusion of 20 units of blood.[2] No crossmatch is necessary for fresh frozen plasma, but it should be ABO compatible with the recipient's red blood cells. It should be transfused within two hours of thawing.

V. *Platelet concentrates* are prepared from single units of whole blood or by plateletpheresis. They are usually indicated in patients with aplastic anemia, leukemia and other forms of cancer or patients undergoing intensive cancer chemotherapy when the platelet count is below 20,000/cu. mm. "Prophylactic" platelet transfusions should be avoided in clinically stable patients because they increase the risk of alloimmunization to HLA or specific platelet antigens, thus limiting the effectiveness of subsequent transfusions. Patients who have become refractory to random donor platelets can often be treated successfully with platelets obtained by platelet-pheresis from HLA comdonors. ABO compatibility is preferable but not essential for platelet transfusion because the small amount of plasma containing antibodies in the platelet concentrate will usually be diluted sufficiently to avoid problems. However, platelet concentrates are always contaminated with some erythrocytes and the possibility of Rh immunization is present when Rh positive platelet concentrates are given to Rh negative recipients.[3] Therefore, if platelets from Rh negative donors are not available, anti-Rh_o (D) immunoglobulin should be given within 72 hours to Rh negative recipients after Rh positive platelet transfusions. It is important to avoid Rh immunization not only in young Rh negative females with a curable disease, but in all patients who are likely to require subsequent blood transfusions because more crossmatching problems will be encountered after sensitization.

One platelet concentrate should raise the platelet count 7,000-10,000 platelets/cu. mm. in a 70 kg. adult. The average dosage is one unit per 10 kg. of body weight, but many factors including fever, sepsis, splenomegaly, active bleeding, or sensitization to HLA or specific platelet antigens will decrease survival of transfused platelets. Therefore, close laboratory monitoring of the patient's platelet count is necessary to evaluate the effectiveness of transfusions. Platelet concentrates should not be administered through a regular blood transfusion set but through a special filter available for this component.

VI. *Cryoprecipitate* is the cold-insoluble portion of plasma remaining after fresh frozen plasma is thawed under specific conditions. Each bag of cryoprecipitate contains about 30-50% of the Factor VIII activity, 30% of the Factor XIII activity and 23% of the fibrinogen of the original plasma in 3-4% of the original volume of plasma. It is indicated for treatment of patients with classic hemophilia, von-Willebrand's disease, Factor XIII deficiency, and patients with hypofibrinogenemia who require replacement therapy. It carries a much lower risk of hepatitis than Fibrinogen (Human), which is no longer licensed.

There are 80-100 units of Factor VIII in each bag of cryoprecipitate. Each unit of Factor VIII/kg. body weight should raise the Factor VIII level about 2%. Spontaneous bleeding usually does not occur in hemophiliac patients with Factor VIII levels above 5-15%, but levels above 30% are required for normal hemostasis following trauma or surgery. Because of the rapid turnover of Factor VIII, it is necessary to raise the patient's Factor VIII level to 60% every 12 hours to maintain a level over 30%.[4]

Factor VIII antibodies can develop in multiply transfused patients causing a decreased response to transfusions and the need for increased doses.

It is preferable to administer cryoprecipitate as ABO compatible, but this is not essential because the concentration of antibodies in the residual plasma is so low. Rh compatibility is not important because of the negligible red cell contamination. A single bag of cryoprecipitate may be reconstituted with 10 ml. of normal saline. It should be infused as soon as possible after thawing. Like platelet concentrates, cryoprecipitate should be administered through a special filter rather than a regular blood transfusion set.

VII. *Granulocyte concentrates* can be prepared now in some medical centers by the procedure of leuco-pheresis. These have been found useful in reducing mortality in severely leucopenic patients with an absolute leucocyte count under 500/cu. mm. with fever and septicemia, such as those with leukemia, aplastic anemia or patients undergoing intensive cancer chemotherapy. However, many questions such as the importance of ABO compatibility, HLA typing, and time and dose of granulocytes administered in certain clinical conditions need to be resolved before granulocyte transfusions become a common practice. It is usually necessary to transfuse granulocyte concentrates daily for several days to achieve a satisfactory clinical response.

VIII. *Whole blood.* Usage of whole blood should be discouraged. Probably the only indication remaining for the use of whole blood is for replacement after acute massive blood loss (over 40% of the normal blood volume) in the absence of immediately available components. In acute, massive hemorrhage, the patient requires the simultaneous replacement of blood volume and oxygen-carrying capacity. Whole blood was thought to be the component of choice but it is not essential and it is becoming less available. Even massive blood loss can be treated effectively with red blood cells supplemented by protein-containing or crystalloid solutions. Some studies have shown that 1,000-1,200 ml. of operative blood loss can be replaced by electrolyte and/or colloid solutions without the use of red blood cells.[5]

In an emergency situation where only packed red blood cells are available, volume replacement can be maintained initially by the administration of colloid or crystalloid solutions. When more rapid flow rates are required for packed red blood cells, they can be easily diluted with 50-100 ml. of normal saline using a Y-type infusion set.[6] However, lactated Ringer's or other calcium-containing solutions should not be used because they induce clotting of the residual plasma in the unit. Also, carbohydrate solutions such as glucose, dextrose, and dextrans should not be used because they cause hemolysis of the red blood cells.[7]

Many solutions for intravascular volume expansion are available. Most non-colloidal solutions, which are buffered or balanced saline solutions, are inexpensive and particularly effective in the treatment of hypovolemic shock. Colloid solutions in the form of albumin (5% or 25% concentration) or plasma protein fraction (PPF) are more expensive and less readily available but are also very effective plasma expanders and carry no risk of hepatitis transmission.

SUMMARY:

Specific blood component therapy is now regarded as the best transfusion therapy. An understanding of the proper use of blood components is not only essential for providing maximal effective usage of limited blood supplies but also assuring the best patient care. □

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LIBRARY SERVICES TO SOUTH CAROLINA VIA THE STATE'S TWO MEDICAL SCHOOLS*

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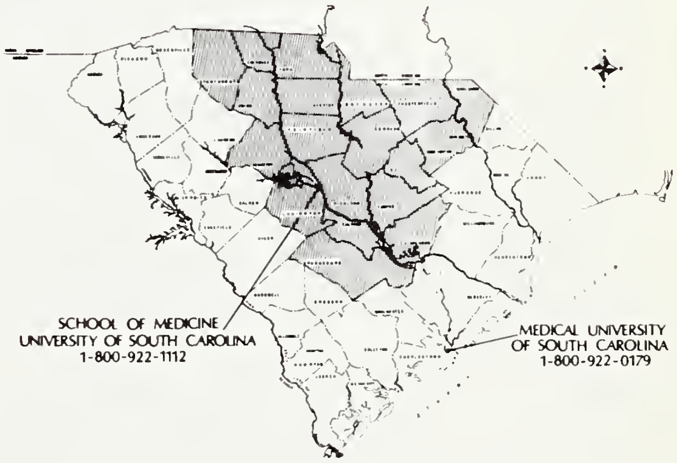
ANNE W. KABLER***

In an effort to provide more efficient access to health care library services for practitioners in South Carolina, the libraries of the State's two medical schools have joined in developing a state plan which divides the state geographically thus sharing the responsibility for the delivery of these services. The plan, which has been endorsed by the National Library of Medicine and the Southeastern Regional Medical Library Program and is compatable with the National Biomedical Communications Network, was implemented September 1, 1978.

Designed especially to meet the informational needs of South Carolina's rural health care practitioners, the primary objective of the plan is to extend services to this group while supporting and supplementing wherever possible the resources of the local health care libraries already serving the urban practitioner.

The implementation of the plan in no way affects, supersedes, or supplants the AHEC (Area Health Education Center) educational resources program but offers an additional service which hopefully will improve access to those remote locations where medical library services are not readily available through either a local hospital or other medical library.

Operationally the plan divides the state by county into two geographic areas of responsibility as indicated on the following map. The Medical University of South Carolina Library will serve the twenty-seven county area shown in unshaded portion while the University of South Carolina School of Medicine Library will be responsible for service to the nineteen county area which is shaded in the map.



Rural practitioners within these respective service areas who do not have ready access to the resources or services of a hospital or other medical library are encouraged to use the toll-free In-WATS lines which are connected directly to the reference departments of the two medical school libraries. The number for the Medical University of South Carolina Library Extension Services is 1-800-922-0179. For the University of South Carolina School of Medicine Library the number is 1-800-922-1112. Recording devices allow access on a 24-hour per day basis. Requests received after normal working hours will be processed the following morning.

Under the plan, the following services are offered by the two medical libraries:

Reference Services: The reference departments of both institutions will endeavor to answer or refer to appropriate resources all types of reference questions from health professionals in their respective areas. The questions might range from the address of a physician in another locality to detailed documentation on a specific current surgical procedure.

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*** From the Libraries and Learning Resource Centers, Medical University of South Carolina, Charleston, S. C. 29403.

Bibliographic Services: Either on a specific request or as part of basic reference service the two resource libraries will provide bibliographic search services. These may consist of either hand-compiled bibliographies or computer-generated bibliographies utilizing data bases such as MEDLINE (INDEX MEDICUS on-Line), BIOSIS PREVIEWS (BIOLOGICAL ABSTRACTS), CHEMICAL CONDENSATES (CHEMICAL ABSTRACTS), and PSYCH ABSTRACTS (PSYCHOLOGICAL ABSTRACTS). A nominal charge may be assessed for use of data bases requested other than MEDLINE.

Document Delivery: Any document, whether book, AV material, or journal article, will be provided by or through the appropriate resource library. Whenever possible, for this service as well as the others, the health care professional is requested to go through his local library. No charge will be made for any inter-library loan service, whether direct or referral, provided by the two resource libraries.

Consultant Services: Trained consultants at both resource libraries are available to provide various kinds of consultation services on an individual basis. These services may range from assisting in budget preparation for information services to instituting a classification system for locating health science materials.

Workshop Services: As interest merits, various types of workshops will be given. Designed primarily as a way to increase the efficiency of information delivery on the local level, the workshops are geared specifically to the person who will interact with the health care professional in providing information services on a day-to-day basis, whether a Certified Medical Librarian or an In-Service Staff Training individual responsible for library and information services. The workshops now being offered under the auspices of the Southeastern Regional Medical Library Program and the National Library of Medicine include a three-day basic workshop designed as an introduction to health science library service, a two-day audiovisual workshop on the acquisition and care of a media collection, and a one-day workshop on consortium development aimed at cost effective methods of providing information services through group effort.

Grant Application Services: Both resource libraries have been authorized by the National Library of Medicine to distribute their Grant Application Kits and to provide basic information concerning the form completion, deadlines for submission, etc.

There is no charge to the health care practioner or institution for the above services, with the exception of non-Medline data base searches and occasional registration fees for workshops.

With the implementation of the plan as outlined, it is intended that the libraries of the state's two medical schools, by joining in a cooperative effort, will be better able to provide more efficient and rapid information services to rural health care practitioners and thus, contribute to the improved health care of the citizens of South Carolina. □

MEDICAL CARE EVALUATION STUDIES: A PHILOSOPHICAL OVERVIEW

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WILLIAM F. MAHON**

The South Carolina Medical Care Foundation, a Professional Standards Review Organization, engages in a variety of activities and functions in conducting business consistent with the federal mandates outlined in Public Law 92-603. The three major activities which are sponsored by the Foundation include: (1) conducting and supervising concurrent reviews of medical care; (2) conducting profile analyses; and, (3) conducting Medical Care Evaluation Studies (MCEs). The two major functions of the Foundation are the delegation of review authority and the encouragement of remedial educational activities as related to process review findings.

The purpose of this article is to focus upon Medical Care Evaluation Studies, the marriage of the audit review findings with programs of continuing medical education (CME), and potential improvement of patient care through the subsequent improvement of physician performance. By definition, Medical Care Evaluation Studies are retrospective studies done in a specified medical area, over a given length of time with a particular patient population. Many persons call such studies medical audits. Since the audits are retrospective, they are totally dependent upon the information recorded; therefore, only certain components of the technical quality of care can be assessed.

As one examines the medical profession's autonomy in assuring the quality of patient care, the relationship between medical audits and CME becomes an issue of significance. Neither the notion of medical audits nor CME is new to the medical community, both having existed for some time as either an elective or required activity. At this time, medical audits are performed in most hospitals because they are required by the PSRO and/or the Joint Commission on Accreditation of Hospitals. There does appear to be more endorsement of CME programs based upon audit findings today than was the case only a few years ago.[1] The increasing emphasis on audit findings may be attributed, in part, to the earnest attempt by physicians to select topics which are of contemporary medical importance as defined by the ability of the disease or condition to be cured, prevented or controlled.

Topics are selected for a variety of reasons: the frequency of a disease existing within a particular patient population, the seriousness of the consequences of the condition as experienced by a patient where inappropriate, inadequate or otherwise deficient care is being rendered, can also be considered. In such cases where patient consequences are a factor, it is reasonable that fewer patient cases need be present to justify the conduct of the audit. Regardless of how or why an audit topic is selected, the basic motivation for selection should ultimately be an attempt to address a perceived medical problem within the wholistic concept of delivering high quality health care.

The most significant aspect of an audit is not necessarily related to the topic selected, but the selection and establishment of the criteria to be used to determine the level of care being rendered. If the audit is to have any significance to the medical profession, it becomes the duty and responsibility of the body establishing the criteria to make sure they are reflective of contemporary standards of high quality care.

The criteria to be used in the conduct of the MCEs is established either by the hospital (if the hospital is designated as fully delegated for PSRO review purposes) or by a regional audit committee (if the hospital is designated as either partially or non-delegated). Philosophically, one of two

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approaches could be assumed by the criteria setters. One viewpoint would revolve around the desire of the medical staff to demonstrate care effectiveness which would result in the setting of very loose or generalized criteria. The other approach would revolve around the belief that the care being rendered should be the best possible, and, therefore, the criteria to be utilized should be reflective of this belief which may result in utilizing more specific criteria. It is hypothesized that the perceived intent of the audit by physicians may also be a significant factor in determining the type of criteria adopted. If the audit is viewed by the physicians as an educational tool for helping one understand more about a problem, the likelihood that more specific criteria will be utilized is increased over the situation whereby the physicians see the audit as punitive in nature.

Recently, the South Carolina Medical Care Foundation received two Medical Care Evaluation Studies done on the topic: "Total Respiratory Support." Both the audits were performed by fully delegated hospitals which means the topic for the audit was selected by the facility, the criteria for conducting the audit was established by in-house staff and data retrieval was accomplished by in-house medical records personnel. As one examines the criteria utilized in conducting the audit, it becomes obvious that in one case an attempt was made to determine the technical quality of care through the implementation of more specific criteria, whereas the other audit's criteria appears to be much more generalized. (See Table I.)

In reviewing the types of criteria utilized in the audits, it becomes evident that some of the criteria represents what could be termed the "general consensus" type, whereas some could be classified as "essential criteria." The points of differentiation are that the general consensus type represents what a consensus of physicians consider desirable for acceptable patient care. This type of criteria will be more general in nature and will not be as useful in determining the actual quality of patient care rendered. The type of criteria that could be termed essential represents a consensus of what experts in a particular medical field consider crucial because the criteria mandates what elements of care must be present to guarantee high quality care relative to a particular disease or condition.[2] There exist many points of discussion relative to the type and specificity of criteria utilized. It does seem, however, that the ultimate worth of the audit is contingent upon the criteria selected and implemented.

TABLE I: TOTAL RESPIRATORY SUPPORT

HOSPITAL "A"	HOSPITAL "B"
Study Objectives: -to evaluate if the respirator is being used according to established parameters. -to determine the incidence of complications in patients requiring ventilation. -to determine if the use of PEEP is associated with the complication pneumothorax. Study Criteria: 1. Documentation of one of the following: apnea; hypoxia; hypercarbia; upper airway obstruction 2. a. Bronchoscopy b. Tracheostomy 3. Removal from Respirator: patients PO2 > 60 and PCO2 ∠ 60 on room air or on supplemental oxygen 4. Patient removed from Respirator 5. Respiratory ventilation is adequate 6. Arterial Blood Gases within normal range 7. Mortality 8. LOS: Average LOS: 17 days Range: 2 - 37 days 9. Obstruction of Airway 10. Infection 11. Patient resisting respirator 12. Deterioration of Pulmonary Function 13. Pneumothorax 14. Massive tracheostomy bleeding and/or pulmonary hemorrhage 15. Ventilator dependency 16. Death 17. a. Fear demonstrated by patient is recognized and documented b. Efforts made to support documented c. Communication problems of patient recognized d. Efforts made to provide communication means documented 18. Atelectasis	Study Objectives: Evaluate the care given patients receiving respiratory support Study Criteria: Indications 1. Lack of spontaneous breathing 2. Diminished ventilation 3. Respiratory rate above 30 (adults) 4. Arterial blood gases Management Physician 5. Timely support therapy 6. Arterial blood values in acceptable limits 7. Post respiratory status a. Normal breathing b. Normal blood gases Nursing 8. Maintain airway Complications Physicians 9. Infections Nursing 10. Cuff leak 11. Bleeding 12. Other Respiratory Therapy 13. Monitor

From the previous discussion, one can see the potential significance and importance of audits to the medical community. Audit findings can have very far-reaching medical care implications. One of the most useful aspects of audits is with the application of the review findings to programs of continuing medical education. As one examines the nature of contemporary medical practice, continuing education by physicians represents an ever increasing component. Contemporary medical practice makes it very difficult for the physician to stay abreast of advances in health care information and methodologies. Within a system where CME is so important and time is so limited, it becomes imperative that the attempts made to provide CME be well-planned, well-directed and based upon topics which are relevant and meaningful to the learner.

A number of authors have been critical of medical education programs conducted for variety of reasons.[3, 4, 5] Most frequently, the negative comments are related to: (1) excessive dissemination of only cognitive information; (2) CME presentations of such a technical quality that the applicability potential is lost; (3) lack of involvement by the learner in the need determination process; (4) employment of weak procedures to judge CME program effectiveness; and, (5) topics selected having little worth or relevance to the learner.

It is specifically in regard to the last point of criticism that Medical Care Evaluation Studies can have an impact. Medical Care Evaluation Studies provide a quantifiable rationale for CME program topics, in contrast to the subjective perceptions of an educational planner. It is the relationship between the audit and the resulting CME program that supports strongly the case for both the selection and implementation of well established, specific audit criteria. This point becomes demonstrable where one facility selected more specific criteria for an audit of "Total Respiratory Support." The potential use of that criteria to underpin a CME Program on the topic, if deficiencies exist, is increased over the situation where very generalized criteria are used which will yield few variations. The body responsible for the selection of the audit criteria must be sensitive to the potential relationship between audits and CME. They should be encouraged to adopt more specific, essential type criteria.

Very much related to a discussion of medical audits and continuing medical education is the notion of quality assurance. Broadly defined, quality assurance refers to each patient receiving the most appropriate medical treatment resulting in the fewest serious complications. Since quality assurance is heavily dependent upon physician performance, CME and auditing constitute the most significant factors influencing the level of care rendered. Again, there exists evidence to support the need for audits to be performed based upon good criteria and programs of CME based upon such findings if physician performace is to be improved.[6, 7]

It would be a reasonable position to assume that as the physician performance is improved the quality of care should also be improved. It should not, however, be assumed that well conducted audits with the review findings being used to establish programs of CME will automatically lead to physician performance changes. It does appear though that within a system where physicians, administrators, and board members are committed to the delivery of high quality health care, that the probability exists that audits used in conjunction with programs of CME is the best approach to take relative to improving the quality of health care rendered. ☐

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President's Pages

AFTER HILTON HEAD

The opinion of the Delegates appeared nearly unanimous: the Mid-Winter Meeting of the House of Delegates, November 3-5, 1978, was a worthwhile occasion; the facilities at the Hyatt on Hilton Head lend themselves well to an SCMA meeting; we should arrange to come back again for future meetings. I certainly concur, and I have asked the SCMA staff to make overtures in regards to suitable dates for future meetings.

The Mid-Winter Meeting (it was really Indian Summer) will be recapped in the Newsletter which actually may reach you before the December *JSCMA*, but it seems appropriate, nevertheless, for me to comment on what I consider to be the highlights of the meeting:

1. *Presentation to Governor James B. Edwards.* It was most gracious of Governor and Mrs. Edwards to take time for a hurried visit to Hilton Head to receive the SCMA's expression of appreciation to Governor Edwards for his contributions to Health Care in South Carolina. The citation on the plaque presented to him was very simple:

> *"In recognition of outstanding leadership in issues relating to medicine and the health and welfare of the citizenry of South Carolina."*

Jim's acceptance remarks, calling on physicians to take an active role in civic and political affairs, were well-directed and well-received. Anne charmed us with her brief remarks about the Governor's mansion, which is beautifully depicted in the recently-published book: *The Governor's Mansion of the Palmetto State.* We are indebted to Jim and Anne for being with us.

2. *Resolution in Regard to National Health Insurance.* As part of my President's Report, I presented a Resolution for submission to the AMA Interim Meeting in Chicago, December 3-6. The Resolution, which was adopted without dissent, calls for the AMA not to introduce any National Health Insurance proposals in the 96th Congress, and for the AMA to oppose any proposals for National Health Insurance which require substantial additional governmental expenditure. I will not try to predict today, November 10, how this Resolution will fare at the AMA in December.

3. *Constitution and By-Laws:* This was, of course, the major order of business. We are grateful to Dr. John Beard and his committee for their excellent work in formulating this report. The Constitution and By-Laws were adopted with some modifications, but with remarkable precision and dispatch. The most hotly-contested issue related to whether the Vice Speaker and the Alternate Delegates to the AMA should have a vote in Council. It was finally decided that they should *not.*

I was particularly gratified that two Residents, Dr. Michael Hoffman of Greenville, and Dr. Stewart Haskins of Charleston, participated actively in the meeting. It is hoped that the adopted By-Laws and the interest of these two Resident leaders will result in active participation of a large number of Residents in the Association.

4. *Special Guests.* We were delighted to have both Dr. Harrison L. Rogers, Vice Speaker of the House of Delegates of the AMA, and Dr. William J. (Jack) Lewis, Member of the Board of AMPAC, to speak to us. Both gave forceful presentations, urging involvement in organized medicine and in its political arm, the PAC movement.

5. *Commission on Byssinosis.* Presented to Council and approved by that body was my recommendation that a Commission be established to determine the medical, social and legal aspects of byssinosis. This was not formally presented to the House of Delegates. However, it has previously been discussed with Governor James B. Edwards who has agreed to cooperate with the appointment of the Commission. It is hoped that this will be a strong and forward-looking program of the Association, in cooperation with the Governor's office.

Several of the other items discussed by the membership will undoubtedly be communicated to you by the Newsletter and other means.

Let me express again to all of the members, not only my appreciation for the opportunity of serving as President, but my earnest desire to have every physician in South Carolina become a member of the SCMA and to participate actively in the deliberations of the medical association.

John C. Hawk, Jr., M.D.

Christmas Seal Greetings from the children of America.

Kids want sparkling, bright Christmases. Not polluted snowflakes and lung disease.

Children who care are speaking up. For lung associations. In the fight against smoking and pollution. Against asthma, emphysema, and other lung diseases.

Christmas Seals protect everyone's lungs. Including little lungs. Which need extra protection to stay healthy.

The children of America created the 1978 Christmas Seals. When you use these seals you help create the kind of disease-free world kids want. And deserve.

Give to Christmas Seals. Because your lung association cares about every breath you take. They really do.

AMERICAN LUNG ASSOCIATION

The "Christmas Seal" People

We care about every breath you take

Space contributed by the publisher as a public service

Editorials

REVIEWING THE UTILIZATION OF UTILIZATION REVIEW

A children's book entitled *Did I Ever Tell You How Lucky You Are?*, by Dr. Seuss, cites the example of the town of Hawtch-Hawtch. This western locality employed a full-time bee-watcher "to keep both his eyes on the lazy town bee." However, the bee's productivity failed to increase. Someone suggested that "our old bee-watching man just isn't bee-watching as hard as he can. *He* ought to be watched by *another* Hawtch-Hawtcher!" This man, in turn, was criticized for failing to enhance the first bee-watcher's efficiency. Inevitably, the entire town was transformed into a line of people "watching on Watch-Watcher-Watchering-Watch, Watch-Watching the Watcher who's watching that bee." The comforting message for children: "You're not a Hawtch-Hawtcher. You're lucky, you see!"[1]

Utilization review, medical-care evaluation program, Professional Standards Review Organization (PSRO), continuing medical education (CME), medical audit, peer review — these are some of the terms now frequently bandied about on the medical scene. It must be acknowledged that, to those not conversant with the day-to-day working of these "bee-watchers," it may at times be difficult to discern *who* is doing *what* for *whom.* It must also be acknowledged that considerable monies and efforts now go into these processes. It is now estimated that in our country, "well over a million hours of physician time is spent each year on hospital utilization review activities and probably tens of thousands of additional hours are spent on related activities at the PSRO and Medical Society level."[2]

Establishment of utilization review committees was made mandatory by Congress for participation in Medicare. By 1970, it was felt that utilization review committees had not curtailed overutilization of health-care services, for various reasons. In 1972, section 249F of Public Law 92-603 established the concept of Professional Standards Review Organizations to watch over the cost-effectiveness of health-care services. Now six years old, these programs have now generated enough data to permit analysis.

Heartening reports suggest that these programs *can* be effective. A recently-reported study from Massachusetts indicated that the Commonwealth Health Agencies Monitoring Program (CHAMP) may have been a factor in reducing length of stay for Medicaid patients by 5.3 percent. The authors concluded:

> ". . . the CHAMP experience indicates that PSRO's can be cost-effective. However, it is not an inevitable outcome. Strong management controls must be exercised over delegated hospital review, without stifling initiative or denying delegated hospitals their role in a partnership designed to maximize quality health care delivered in a cost-effective manner."[3]

An accompanying editorial, from a Blue Cross and Blue Shield office of another state, applauded that "utilization review is having an effect that is almost certainly beneficial in terms of patient welfare and health-care cost containment."[4]

Another heartening study emanates from Oklahoma. The Oklahoma plan, previously known by the palatable acronym, OURS (Oklahoma Utilization Review System), serves as an example of local initiative. By using computer systems already in existence for Medicare and Medicaid claims processing, the computer costs per claim were kept to less than 25 cents. This method proved to be effective in reducing length of stay, without creating a separate, expensive computer processing system to collect and analyze data for PSRO hospital discharge information.[5]

In this issue of *The Journal*, Costello, Cantey, and Mahon provide another thoughtful article from the South Carolina Medical Care Foundation. Focusing on Medical Care Evaluation Studies (MCEs), they outline some of the problems encountered. Such studies contain two components which might be considered to be (1) an *afferent limb* — the audit process; and (2) an *efferent limb* — the educational process. Their table indicates that the quality of study design will, inevitably, determine the efficiency of this "reflex arc." They provide documentation that such processes *can* be effective, when all parties are committed to improvement of health care delivery.

It may well be that all of the major PSRO functions can now be accomplished through existing systems. Efficient utilization of these systems — without the creation of too many "watch-watcher-watchering" positions — is now our greatest challenge.

— CSB

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LIBRARY SERVICES FOR PHYSICIANS: COLLABORATION BETWEEN MUSC AND USC

The cry for cost containment mandates avoidance of unnecessary duplication of services offered by separate institutions. In this issue of *The Journal*, the librarians of our state's two medical schools — the older Medical University of South Carolina in Charleston and the new University of South Carolina School of Medicine in Columbia — outline a remarkable plan for cooperation. Their plan goes well beyond what might be called the "usual" polite agreement about philosophies and objectives. It offers *specificity*. A map divides the state into two geographic areas: one to be served by the MUSC library and the other to be served by the USC library. Their text states, concretely, how practitioners in any county can avail themselves of library services, and how the libraries will cooperate not only with each other but also with other state and national agencies.

We applaud such efforts. Such pooling of resources and combining of efforts can only, as the authors suggest, "contribute to the improved health care of the citizens of South Carolina."

— CSB

COST CONTAINMENT AND LABORATORY TESTS

The letter by Dr. DiSalvo from the DHEC Bureau of Laboratories, below, tells us why even this state agency must raise fees for certain laboratory tests. The issue of monitoring the utilization of such services remains very much with us, and although there has been a great deal of dialogue, there have been few proposed solutions.

Not many years ago, as an intern, the editor recalls being advised by an assistant resident that "you'll never be criticized for ordering too many laboratory tests." The working rule seemed to be "when in doubt, order the test." Indeed, the number of tests which could be devised and ordered seemed to serve as a measure of one's industry and cleverness. Nowadays, the themes have changed: residents receive frequent criticism about the judiciousness of these requests. Nevertheless, the working rule seems, to many of us, to be the same. When in doubt, one orders the test.

Recently, I had the privilege of supervising a small group of medical students in their first session on examination of the chest. Even before they had taken off their shirts for inspection, palpation, percussion, and auscultation, one of them asked: "Isn't this really redundant anyway — don't you go ahead and get a chest x-ray anyway?" Although the student thereby subjected himself to a lengthy spiel about the issue of cost-containment, one wondered whether the message would have impact. The problem remains that of the *technological imperative:* given the power to define things more clearly, the temptation to spend the money to get the information looms powerful.

We should perhaps change the rule: "When in doubt, *consider* the test but *ask* whether it is *really* going to affect management decisions and is *likely* to be cost-effective."

Recently, I encountered the following refreshing progress note written by one of our town's older practicing physicians: "Would a lung scan be a waste of money?"

We concluded that it would be, indeed.

— CSB

TO THE EDITOR:

In January 1972, the Governor's Management Review Commission recommended that the S. C. Department of Health and Environmental Control (DHEC) institute charges for certain laboratory examinations performed by the Bureau of Laboratories. These fees, instituted on January 1, 1974, are made to private physicians, health institutions and organizations, industries and others who use the laboratory services provided by DHEC.

In the intervening years, the cost of providing these services has increased. Therefore, effective January 1, 1979, the DHEC laboratory fees for these tests for which there is a charge will be increased to reflect our current costs.

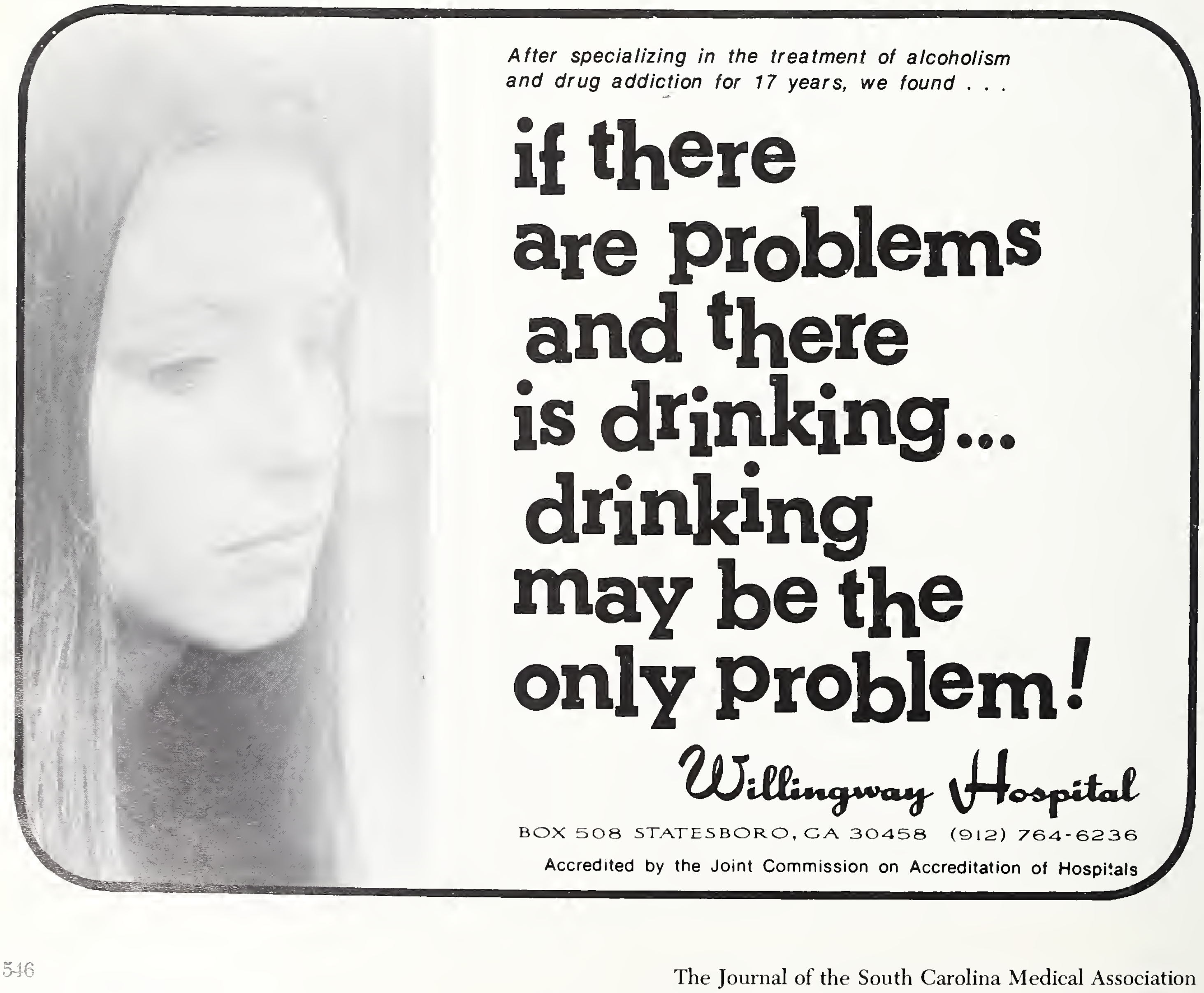
The automated billing system will remain in effect.

The physician's prerogative not to pay for laboratory examinations performed in the treatment of a patient who cannot afford to pay, who does not have a third party to pay the bills for him and whom the physician is not charging for any of his services also remains in effect.

The new fees approved by the Board of Health and Environmental Control are as follows:

Rh	$ 5.00
Rubella	5.00
Serological test for Syphilis	1.00
FTA-ABS	8.00
Toxoplasmosis	14.00
Infectious Mononucleosis	8.00
Blood Lead:	
Quantitative	7.00
Zinc Protoporphyrin	3.00
Drugs:	
Qualitative	3.00
Quantitative	10.00

— Arthur F. DiSalvo, M.D., Chief
Bureau of Laboratories
South Carolina Department of Health
and Environmental Control
Columbia, S. C. 29201



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AUXILIARY PAGE

PRESIDENT'S REPORT TO THE SCMA HOUSE OF DELEGATES
November, 1978 — Hilton Head Island, S. C.

I bring you greetings from the Auxiliary to the South Carolina Medical Association. It is a privilege to share with you some of our accomplishments and goals.

We were honored to have your President, Doctor John C. Hawk, Jr.; members of the Advisory Council, South Carolina Medical Association; and Doctor S. Hunter Rentz with us for our Fall Executive Board Meeting.

We appreciate the timely and inspiring message brought to us by Doctor Hawk. Our members are much better informed concerning the South Carolina Medical Association Program for "The Impaired Physician," as presented by Doctor Rentz. We wish to pledge our support to this and other programs of the SCMA as we are called upon.

This year we want to have all physicians' spouses informed about issues facing organized medicine, to be involved in supporting programs to help solve them, and to be committed to the goals and objectives that will make a healthier South Carolina for ourselves, our families, our communities and our nation.

Our Committee Chairmen and the 1,230 members in 20 county organizations are well on their way toward achieving goals set for the year. We have a potential of 1,837 members; and with your help, we will strive to recruit at least 125 of them. If your spouse has not joined us, please encourage her/him to do so. Both the South Carolina Medical Association and the South Carolina Medical Association Auxiliary need members, as members mean projects. Together we CAN make our voice heard as we promote legislation and programs in the best interest of medicine.

We are working with intern and resident spouses, encouraging them to get their spouses to join the South Carolina Medical Association.

Through our enthusiastic and energetic Legislative Chairmen, our voice has already been heard in Washington, D. C. Our LEGS-ALERT stands ready to assist you with bills before the U. S. Congress when you ask us.

Contributions to AMA-ERF for scholarships and research are growing. We need your support to reach our goal of $25,000.00. We can boast of 26 projects on deposit in the PROJECT BANK.

Many exciting NEW DIMENSIONS are being added to our work through COMMUNITY HEALTH and FAMILY HEALTH projects, such as an "Anti-Smoking Program" presented to third grades; "An Early Start to Health," sponsored for kindergarten through third grades; Hypertension Screening; Nutrition Programs; and Home-Delivered Meals. We promote immunization, Vials for Life for senior citizens and the handicapped; and rape prevention films are shown to high school students. We work with the retarded and are involved in Mental Health Programs.

We continue leadership in the Child Prevention Program which you helped to launch in 1974. Over 8,000 suspected cases of abuse and neglect were reported last year.

A number of counties, as well as our state, give HEALTH CAREER scholarships. Applications for our loan to medical students are increasing.

It is our privilege to assist you; and in order to do this more effectively, we now have a Committee on Long Range Planning; and we welcome your suggestions in this direction.

Your support and encouragement have been wonderful. The Auxiliary appreciates it. THANK YOU.

Respectfully Submitted,

Mrs. Alton G. Brown, President
SCMA Auxiliary

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